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VOLUME 26 March, 1935 NUMBER 3

PROPOSED HEALTH INSURANCE FOR MANITOBA
J. C. McMILLAN

PUBLIC HEALTH IN ONTARIO

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National Conference

Toronto, June 3-5, 1935

(*See page 145*)

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CANADIAN PUBLIC HEALTH JOURNAL

VOL. 26 March, 1935 No. 3

A Proposed Scheme of Health Insurance for Manitoba*

J. C. McMILLAN, M.D., F.R.C.P.

Winnipeg

AS a medical organization, as physicians, licensed and registered to practice in the Province of Manitoba, what is our main objective? Is it not to provide a complete and efficient medical service for the people of this province?

"Service to the public" has always been the motto of the medical profession.

Unfortunately, in order to discharge our obligations as private citizens, we must have reasonable compensation for our services. Under the present system that compensation is received from our patients who are able to pay according to their ability to pay.

Every doctor's practice is made up of two classes: those who can pay for services rendered and those who cannot. As long as the first class is sufficiently numerous and the second class not too numerous, we are able to function and give an adequate service to all. Should the first class decrease and the second class increase, there will come a time when the system breaks down.

We might well ask ourselves the question: "Are we not now approaching or have we not even reached the breaking point?"

It is granted that many of the economic difficulties which are being experienced by the members of our profession are merely those shared by every other person in the community. On the other hand, I believe that the present depression has served to reveal many inherent weaknesses in our present system of supplying medical services.

Many of those who have made a serious study of these problems have concluded that our present system is so defective that some new method of supplying medical services must be evolved to satisfy the demands of the public.

In the past, when any change was proposed or even mentioned we have thrown up our hands in holy horror and shouted "State medicine." So we have been inactive. While it is true that during the past few years we have thought a lot and talked a lot about these problems, and have even gathered some fairly accurate statistics, the fact remains that as an organized medical body we have done practically nothing.

**Presidential Address to the Annual Meeting of the Manitoba Medical Association, Winnipeg, September, 1934.*

But while we have been inactive, the public have not. They have not only been thinking, but have been acting. And what has happened? Our governments have been forced to assume more and more financial responsibility for the medical care of our people. At the present time our governing bodies are directly responsible for the medical care of about 150,000 people in this province; that is, one-fifth of our population. But the most important development, as far as we are concerned, is the municipal doctor. While in Manitoba we have only five of these, in Saskatchewan I am informed there are 107. That is to say, over one-third of the rural parts of Saskatchewan have actually adopted the worst type of state medicine. All this has happened while we have stood by and insisted we must not have state medicine.

In my judgment, the time has come when we must decide if it is safe for us to continue our policy of watchful waiting and run the risk of having some new system forced upon us by outside agencies, or are we going to work out and attempt to introduce some new plan of our own for rendering medical services to the public.

In England and other European countries, plans of health insurance have been in operation for many years. In many cases these plans were thrust upon an unprepared medical profession by politicians and had many defects. But these defects have been gradually eradicated until at the present time the main criticism by the medical profession is that they are not sufficiently comprehensive. That is, they provide only a limited medical service for certain classes of the people.

In Canada much has been written on the subject but no plan has actually been set up or tried out,* so we have nothing really to go by, and any plan that may be adopted will have to fulfil the needs of the particular province involved and the details worked out from information and data available. In this connection I would like to quote from a recent article by H. H. Wolfenden, entitled "Insurance and Public Health",† in which he says: "Insufficient allowance is often made for the fact—so well known to actuaries—that it is almost entirely useless to rely on estimates from European data, or statistics of Workmen's Compensation Boards or mere 'sickness surveys', without very careful actuarial adjustments for the special and often wholly different characteristics of the portion of the Canadian population for which the estimates are required. Moreover, it is dangerous to ignore the effects of the gradual aging of our population, for, especially in the West, our age distribution is still that of a young community which in future years will mature with a consequent large increase in total costs for incapacity and illness."

But, notwithstanding our lack of knowledge and experience of this subject, I believe that we are capable of setting up some plan of health or sickness

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*The report of the Committee on Medical Economics of the Canadian Medical Association, which was published shortly after the presentation of this address, is most comprehensive and merits careful study by every member of the profession in Canada.

†*Canad. Pub. Health J.*, **25**: 307, 1934.

insurance that would provide an efficient medical and hospital service for all the people of this province.

In my opinion, any plan to be successful should embody the following principles:

1. Free choice of doctor by the patient.
2. Payment to doctors for services rendered.
3. It must include a complete medical and hospital service.
4. It must include every person in the province.
5. The relation between the different branches of the profession must not be disturbed.
6. The administration of the plan must be under a board or commission, non-political, but must have a governmental connection through the Department of Public Health.
7. The medical profession must have the major part part in the management.
8. It must be a compulsory contributory plan of taxation on a true insurance basis.
9. Medical and hospital service should be supplied only within the province.
10. Provisions must be made for our Medical College.

I consider a medical school an important means of maintaining a high type of medical service. A medical service must be the same for the poor as for the rich. An ulcer in a poor man's stomach takes just as much care in diagnosis and requires exactly the same treatment as if it were in the stomach of a rich man. But this does not hold for hospital accommodation. The plan that I have in mind would provide an efficient hospital service, probably as we know the present public ward service. If better accommodation than this is desired, the limit will be the patient's ability to pay for extras.

While insufficient data in Manitoba are available, certain figures can be obtained from the Department of Health and Public Welfare with regard to the cost of hospitalization. For the year 1933 we find that the average per capita cost for operating our hospitals was $3.00. We have also some information as to the cost of supplying medical care apart from hospitalization, through the Unemployment Relief Commission. We find that the average per capita cost per year for the type of medical service that is being rendered to the unemployed in Greater Winnipeg is $2.25. Of course, this is only a partial medical service and is being given at cost or below cost, so that a complete medical service at a reasonable schedule of fees would be much more.

We are going to suggest, for the purpose of this paper, the figure of $6.00 per person per year for the whole population of the province, for supplying a complete medical service; that is, a total of $9.00 per person per year for a complete medical and hospital service. If we take the population of Manitoba as 700,000, this would mean a grand total of $6,300,000. But there are a

number of people in our province who are at present wards of governments, and who probably always will remain such, so we think an even $6,000,000 would finance the proposed scheme.

The people of Manitoba can be divided into two main groups for taxation purposes. The first group are those who make their living off the land, that is, bona fide farmers and their dependents, comprising some 250,000 people. The remainder are subject to the present 2 per cent wage tax.

Now, how are we going to obtain the $6,000,000 required? We know that at present there are certain sums contributed by the State, mainly for hospitalization purposes, and these funds could be allowed for the scheme. As near as we can estimate, the cost to the City of Winnipeg for this purpose is at least $500,000 per year. The cost to the other municipalities of the province is at least $300,000 per year. The cost to the Provincial Government is at least $400,000 per year. And the Workmen's Compensation Board, which obtains funds from industry, paid out last year for medical care and hospitalization at least $130,000. In a normal year I should judge this would be at least $150,000. This makes a total of $1,350,000, leaving a balance of $4,650,000 to be raised from the people.

If the proceeds from the present wage tax could be set aside for this purpose and increased to 3 per cent instead of 2, it would bring approximately $3,000,000, leaving a balance of $1,650,000 to be raised from the farming community. It has been suggested that two methods may be employed for raising this amount: first, a definite mill rate on equalized assessment on the farming property of the province, or, secondly, a definite amount per acre to be collected through the ordinary taxes. The first method, I think, is preferable. A rate of six mills on equalized assessment on all farming lands would realize the sum of approximately $2,000,000. In those municipalities which are at present employing a municipal doctor, the assessment is about two mills. For this the people are receiving only a partial medical service and no hospitalization.

Now, to sum up our figures, we have already $1,350,000 that has already been paid for medical care and hospitalization by the different governing bodies and other organizations. A 3 per cent wage tax would give us approximately $3,000,000, and a 6 mill assessment on farm lands would give us another $2,000,000, making in all $6,350,000, a surplus of $350,000, for administration costs and a sinking fund.

The administration of any such plan should not be complicated and the medical profession should have a strong representation on any board or commission. One might think that there would be great opportunity for abuses, both by the medical men and the people, but on the whole I believe that people, including the medical profession, are essentially honest. This has been borne out in the operation of the medical relief scheme now in force in Greater Winnipeg, and I am sure that you will all agree with me that our Compensation Board is operating efficiently and as far as we are concerned is giving complete satisfaction.

The many advantages of such a scheme should be apparent to all. In the first place, probably the greatest advantage would be that those requiring medical care and hospitalization would be sure to get it; the people would pay for this service while they were well and able to work, and a severe illness would not be the financial catastrophe that it is at the present time. In the second place, all our governing bodies would be relieved of the enormous expense for medical care of indigent persons. I also believe that the actual cost for hospitalization could be greatly reduced from what it is at the present time. Also, the centralization of administration would greatly reduce administrative costs. The hospitals would be in a much better position because they would be paid for all accommodation supplied. This scheme does not make provision for capital outlay to hospitals, but we think that this might be taken care of by extra payment received for accommodation over and above that which would be allotted under this scheme. Lastly, the benefit to the medical profession needs little comment, but two points might be mentioned. The physician would be relieved of the necessity of making any financial arrangement with his patient, which is so often irritating and unsatisfactory, and he would have the free use of his fellow practitioners in a consulting capacity and be able to give a much more satisfactory medical service than he does at present.

Some of you may think that the figures quoted are too low to provide a complete medical and hospital service, but we have used them as a means of setting up the financial framework of a scheme that might be feasible. At this point I would like to suggest to the incoming Executive that this problem be turned over to the Committee on Sociology for their intensive study during the coming year.

We have assumed in the foregoing to suggest the framework of a scheme for the supplying of a medical and hospital service that I feel would meet the needs of all the people of Manitoba.

In conclusion, I wish to thank the members of the committee on sociology and the Department of Health and Public Welfare for the assistance they have given me in preparing this address.

NATIONAL CONFERENCE

Canadian Public Health Association
Ontario Health Officers' Association
Canadian Tuberculosis Association
Canadian Social Hygiene Council

ROYAL YORK HOTEL, TORONTO

JUNE 3, 4 and 5, 1935

The Development of Public Health in Ontario

BY THE PROVINCIAL DEPARTMENT OF HEALTH

TO meet the emergency of threatened cholera outbreaks in Canada, provision had been made in Upper Canada by the Public Health Act of 1849 to permit of the functioning of a central board of health. The first Public Health Act in Ontario was passed on the 29th of March, 1873, and empowered the Lieutenant-Governor to establish a central board of health if a serious outbreak threatened. It provided that a commission of five persons should be appointed to execute all powers vested in the central board and required local municipalities to nominate a local board of health in such emergency. The Act in addition gave to health officers and local boards authority to remove to hospital persons suffering from serious contagious disease and for the examination of the occupants of any dwelling by two medical practitioners.

The severe outbreak of yellow fever in the United States in 1877 caused the appointment in Ontario in the following year of a select committee "on the Subject of Sanitary Measures for Maintaining and Promoting Public Health". A copy of the report of this committee, signed by Adam Crooks, chairman, is in the possession of the Department of Health. After the committee had made its report, interest was continued in the creation of some permanent central health organization. Various commissions were appointed and in 1881 an organized movement took place in Toronto among physicians, led by Dr. William Oldright, Professor of Hygiene at Toronto University, and Doctors Peter Bryce and Charles Covernton. As a result of these efforts a Provincial Board of Health was established by the Public Health Act of 1882.

The Board consisted of the following members: William Oldright, M.A., M.D., chairman; Charles W. Covernton, M.D.; Horace Yeomans, B.A., M.D.; Frances Rae, M.D.; John J. Cassidy, M.D.; John Galbraith, M.A., C.E.; and Peter H. Bryce, M.A., M.B., secretary (part-time). The budget of the Board was $4,000 and the first meeting was held in Toronto on May 9, 1882.

The Act required that at least four of the members must be duly registered medical practitioners. This was the first definite association of physicians as health officers in Ontario. The Board was authorized to urge municipalities to appoint health officers or local boards of health, but had no authority to require action.

The Public Health Act of 1884

The Provincial Board, therefore, was almost wholly of an advisory character. By the close of the year 1883, following the continuous urging of the Provincial Board, local boards had been established in only fifty communities. To effect the organization of local boards throughout the province, the Board prepared the Public Health Act of 1884, basing it on the English Consolidated Public Health Act of 1875. This Act gave authority to the Provincial Board to make regulations for the prevention or mitigation of disease and for all matters re-

lating thereto, and outlined the powers and responsibilities of local boards of health. By the Act local boards were required to provide special hospitals for infectious diseases, to report smallpox, diphtheria, scarlet fever, cholera and typhoid to the Provincial Board, and to enforce quarantine and conduct disinfection. Local boards were also responsible for the control of nuisances and the prevention of the sale of unsound meat and other foods. All plans for public water supplies or sewerage systems were required to be submitted to the Provincial Board in order that the plans most likely to secure the best results might be adopted.

The Development of Local Boards of Health

Under the new Act more than 400 local boards were formed before the close of the year and 221 annual reports were received. Thus within a year two-thirds of all the municipalities of the province had local health organizations. Of the 203 cities, towns and villages, 180 had provided health boards, but in a total of 447 townships only 184 boards had been appointed. Of these township boards, 25 had appointed medical health officers and 19 had appointed sanitary inspectors. By the end of 1888 there were in existence throughout the province 520 local boards with 350 medical health officers and by 1890 the total had risen to 576 boards with 356 appointed medical health officers.

Legislation was enacted in 1895 giving power to the councils to appoint members of local boards of health for three years. The more permanent character of these local boards was a factor in increasing their value.

Amendments were made to the Act in 1885 permitting the Board to deal more efficiently with contagious diseases, in 1886 for the provision of isolation hospitals, and in 1887 and 1890 subsequent amendments relating to the control of communicable diseases and the inspection of dairies, dairy farms and slaughter houses.

The progress which was made by the Provincial Board of Health during the first thirteen years of its activity was due largely to the effectiveness of the services of its secretary, Dr. Peter H. Bryce. Assuming his duties in 1882 with the organization of the Board, he conducted investigations in many parts of the province into sanitary conditions, stimulating the formation of local boards and aiding in their efforts to control outbreaks of disease. In 1884 the Board received appropriations sufficient to permit Dr. Bryce, who had served previously in a part-time capacity, to assume full-time duties. The occurrence of a severe and extended outbreak of smallpox in Hastings County in 1884 demonstrated the value of the provincial health organization. In Hungerford Township alone this outbreak was responsible for 203 cases and 66 deaths. The thorough work of Dr. Bryce in controlling the epidemic gave confidence to the Board in facing the dangers attendant on the great epidemic of smallpox which occurred in Montreal in the following year. The Board issued regulations and set up an elaborate system of defence so complete that in Ontario only 21 deaths occurred during that epidemic year, while there were over 7,000 deaths in the province of Quebec and 3,425 in Montreal alone. Following the epidemic, local boards of health were given authority to conduct compulsory vaccination and to ex-

propriate land for isolation hospitals when necessary. The authority for this action was vested in a Vaccination Act. The establishment of a vaccine farm for the preparation of vaccine virus was recommended in 1885, with the suggestion that this be conducted at the Agricultural College at Guelph. Under the supervision of the Provincial Board, vaccine virus was made available in 1887 by Dr. Stuart at Palmerston, Ontario. In 1894 the Board took active steps in regard to the proper use of smallpox vaccine, advising physicians as to the methods of vaccination and care of the vaccine, and made provision that municipalities should maintain supplies. It is interesting to record that among the early investigations of Dr. Bryce were several outbreaks of typhoid in 1882 which were traced to the milk supply. He urged legislation which would permit of milk inspection. As a result, the Public Health Act was amended to permit of periodic inspection, by local boards of health, of dairies and also of meat supplies originating within or outside a municipality. From year to year additional legislation was passed, providing for the notification by teachers of contagious disease in schools, regulation of ice supplies, and other sanitary matters. In 1895 authority was given to the Board to require that all plans for water supplies and sewerage works be submitted for approval. Its effect was seen in the rapid improvement in these utilities and the consequent effect on the incidence of water-borne diseases such as typhoid fever. In the same year legislation was passed relating to the tuberculin testing of milk cows, the inspection of bake shops, and meat inspection. Dr. Bryce believed particularly in the establishment of municipal abattoirs where slaughtering could be centralized, permitting of inspection.

Appreciating the tremendous significance of the bacteriological discoveries which were being recorded from year to year, Dr. Bryce urged the establishing of a bacteriological laboratory where practical application might be made of these advances. The high prevalence of diphtheria was a stimulus for action. The laboratory was opened in 1890 and in the first year 100 swabs from suspected diphtheria cases were examined. The story of the development of the laboratories is recorded later in this paper.

Dr. Bryce was cognizant also of the importance of vital statistics. In the first year of his appointment he sought the co-operation of physicians throughout the province to become weekly correspondents of the Board so that reports on printed forms of the prevalence of various diseases might be made to him. The form included 49 diseases. Blank forms were supplied stamped and a case book was sent to each correspondent. The province was divided into ten districts for statistical purposes. Immediate use of such statistical data was made by Dr. Bryce in a paper entitled "Why so many people die of consumption", which was read at the Sanitary Convention held at London, Ontario, in 1883. In 1892 he succeeded in bringing vital statistics into closer relationship with the Provincial Board of Health, being appointed Deputy Registrar-General for the province. In 1896 the passing of the Consolidated Act relating to Births, Marriages and Deaths made possible the receiving of monthly reports of all deaths from contagious diseases. Through these reports the Provincial Board was supplied with essential information regarding the prevalence and mortality of these diseases.

Dr. Bryce's administration was characterized by an intense zeal for the advancement of public health and his vision was shown in his appeal for the appointment of county health officers. He named three conditions necessary to accomplish efficient public health administration; namely, a sufficiently large area of population to permit of the employment of the full-time services of a medical officer of health, the employment of physicians with special training in public health, and permanency of tenure of office. In 1890 provision was made whereby county health officers might be appointed, but the project failed to gain support in the rural areas, due to hesitance on the part of county councils to incur the expenses hitherto borne by the municipalities, and, possibly, the size of many of the counties.

In 1903 Dr. Charles A. Hodgetts succeeded Dr. Bryce as Chief Health Officer, the latter having resigned to accept the appointment as Chief Medical Officer in the Department of Immigration, Ottawa. Dr. Hodgetts, as a member of the department, had served as Medical Inspector and as Medical Officer of Health for the unorganized portions of the province. As Medical Inspector, he successfully controlled outbreaks of smallpox which threatened to be serious, and laid the foundation for adequate medical care of lumbermen and others engaged in work in unorganized districts. Dr. R. W. Bell was appointed to succeed Dr. Hodgetts as Medical Inspector and continued in this office until his death in 1923. Dr. Bell was known throughout the province for his faithful and devoted service.

On the foundation laid by Dr. Bryce, Dr. Hodgetts extended the work of the Provincial Board of Health not only in the field of medical inspection and in laboratory service, but by giving a large place to educational work. The growth of urban municipalities presented new problems. The increasing volume of raw sewage poured into water courses demanded measures of control. Legislation was passed prohibiting the emptying of any sewage drainage or factory refuse into a source of public supply. In 1904, on the recommendation of Dr. John A. Amyot, then Provincial Bacteriologist, an experimental plant for the investigation of methods of water and sewage treatment was established in Toronto and further extension of the laboratory services was made in the opening of a branch laboratory in Kingston, Ontario. The value of the experimental station was evidenced in the first year of its activity, when thirty-five sewerage and twenty-five municipal water supply problems were investigated.

In 1906 Dr. Hodgetts, in his annual report, stressed the fact that there was need for a revision of the Public Health Act, pointing out that the system of local boards of health failed in many instances to provide health services for municipalities. He urged the appointment of physicians qualified in public health, who would devote their entire time to the administration of sanitary measures, recommending that the province be divided into county or other districts to serve as administrative areas in health matters. With a vision of the health needs of the province, he emphasized the value of free distribution of smallpox vaccine and of other essential biological products, particularly diphtheria

antitoxin. Endorsation of the latter recommendation is found in the resolution of the Board in 1907. In 1910 Dr. Hodgetts resigned to become Medical Adviser to the Committee of Conservation and was succeeded by Dr. J. W. S. McCullough, who had been a member of the Provincial Board since 1906 and had been appointed Chief Officer of Health and Deputy Registrar-General in 1910.

For some years, consolidation of the public health laws had been under consideration by the Board. Under the direction of Dr. McCullough, this undertaking was successfully completed in 1912. As a result, the Public Health Act of Ontario has served as a model for similar legislation throughout Canada. The passing of the revised Public Health Act marked a new period in the development of public health in Ontario. With the desire of assisting local municipalities in the conduct of health work and to permit of closer supervision by the Board, provision was made for the dividing of the province into ten districts, with the appointment of district health officers. Seven officers were appointed to this position at that time. Careful consideration was given to the status of the local medical officer of health and under the terms of the Act he was made executive officer and member of the local board of health, from which position he could not be removed without the approval of the Provincial Board. Further, to permit of the bringing together of local health officers throughout the province, provision was made for the calling of an annual conference, with the municipality to be responsible for the health officer's expenses. In 1918 an amendment to the Act further strengthened the position of the health officer by providing that disputes as to his salary could be referred to the county judge.

During the years of the Great War the Central Laboratory of the Provincial Board prepared and supplied free of cost to the Department of Militia and National Defence the major portion of the typhoid-paratyphoid vaccine used by the Canadian Expeditionary Force.

Under Dr. McCullough's direction the work steadily expanded. Although the organization of the work in the form of "divisions" was not made until 1920, active programmes were conducted in the various special fields. With the appointment of a sanitary engineer in 1911, the work of the engineering division rapidly enlarged. Although it was not possible during the years of the War to further the establishment of a child hygiene bureau, its organization was accomplished in 1920. The War focused attention on the problem of the control of venereal disease. In 1918 the Government passed the Venereal Disease Prevention Act, which was the earliest comprehensive legislation of the kind in Canada providing measures for the treatment and control of these diseases. At this time also public health education, industrial hygiene, and an enlarged programme of tuberculosis control were developed. As so much of the progress of the work of the present divisions of the Department of Health relates to the accomplishments of this period, further reference will be made in the outline of each division.

In 1919 the Board, which had been part of the Department of the Provincial Secretary, was transferred to the Department of Labour.

In 1923 the growth of the work of the Board necessitated the establishment of a separate department of health with a cabinet minister responsible for health matters, the Honourable Dr. Forbes Godfrey being appointed as the first Minister of Health in Ontario. In 1925 the Department assumed full official status with the appointment of a deputy minister. Dr. W. J. Bell, who formerly had been Paediatrician to the Division of Child Hygiene, was the first occupant of the newly created position, and Dr. J. W. S. McCullough was appointed Chief Inspector of Health. The Provincial Board of Health was discontinued and the services of the chairman, Dr. Adam Wright, were retained as Associate in Public Health Education. At this time also, the Division of Maternal and Child Hygiene and Public Health Nursing was united with the Division of School Hygiene, which had recently been transferred from the Provincial Department of Education, in which it had been organized in 1919. By arrangement, the annual grants to those school boards or boards of education carrying on an approved type of school health service were continued by the provincial educational authorities, and the Department of Health extended to the municipalities conducting such a service under the direction of the local health department substantial financial assistance when the programme was acceptable to the Department. At the same time Dr. F. J. Conboy became Director of Dental Services and the Registrar-General's Branch was transferred from the Provincial Secretary's Department to the Department of Health as the Division of Vital Statistics.

In 1930 the Hon. Dr. Godfrey retired through ill health and was succeeded as Minister of Health by the Hon. Dr. J. M. Robb. Important changes were made at this time in the organization of the Department. A Department of Hospitals was established, to which the administrative and directional control of hospitals, sanatoria and mental institutions was transferred from the Provincial Secretary's Department. To the latter department was returned the Registrar-General's Branch.

While the Ontario Department has continued to enlarge the scope of its consultative and directional services in advance of the trend of popular and official demand, certain well considered constructive efforts are worthy of special mention. Of particular interest is the investigation of the problem of cancer. A Royal Commission on Cancer was appointed in 1931 and carried on investigations in the United States, Great Britain and in a number of European countries. Inquiry was made concerning the use of radium and x-rays in treatment and concerning measures directed towards the control of this disease. The Commission consisted of the Hon. Dr. H. J. Cody, chairman; Professor J. C. McLennan, Dr. W. T. Connell, Mr. A. R. Ford, the Hon. Dr. J. M. Robb, Minister of Health, and Dr. J. W. S. McCullough, secretary. A comprehensive report was issued in the spring of 1932. Among the many recommendations were the following: the establishment of active treatment centres and diagnostic centres, the purchase of radium, the construction of an emanation plant, the promotion of an active campaign of health education, and the appointment of a cancer commissioner. Institutes of radio-therapy have been opened in con-

nection with the Kingston General Hospital, the Toronto General Hospital, and the Royal Victoria Hospital, London, and diagnostic treatment centres in the Civic Hospital, Ottawa, and in the Hamilton General Hospital. Radium has been procured, a radium plant erected, large quantities of literature distributed, and lectures given to upwards of 100,000 people.

In 1932 an intensive study of health teaching in the elementary schools of the province was undertaken by a joint committee with the Department of Education and is being actively continued. In January, 1933, an area in the extreme east of the province was selected for the intensive study of conditions relating to the health of all ages and the effectiveness of the existing municipal health programme, with the desire of determining the best form of full-time health service to meet the needs of rural areas.

Following the provincial election in 1934, the Hon. Dr. J. Albert Faulkner was appointed Minister of Health, succeeding Dr. J. M. Robb. Further steps have been taken in the cancer control programme by the appointment of a representative commission to act in an advisory capacity to the Department, and the Ontario Hospitals Service has been strengthened by the provision that all future appointments will be made by examination.

THE WORK OF THE DIVISIONS

To record the significant developments in the special fields of public health endeavour an outline of each of the present administrative departments is now given.

DIVISION OF LABORATORIES

It is of particular interest that the first public health laboratory in North America was established in Toronto by the Provincial Board of Health of Ontario in 1890, antedating the organization of a laboratory in New York State by three years. The investigations of the Board in determining the causes of outbreaks of disease emphasized the value of a laboratory where the new discoveries in bacteriology could be applied and where water, food, milk and air could be analyzed. The laboratory was established under the direction of Mr. J. J. Mackenzie, B.A., who in 1900 became Professor of Pathology and Bacteriology in the University of Toronto. At the time of his appointment in the laboratory he was a Fellow in the Department of Biology, University of Toronto, under the direction of Professor R. Ramsay Wright. At the request of Dr. J. W. S. McCullough, the late Professor Mackenzie made this brief record of the story of the establishment of the laboratory.

> "The Board of Health at that time (1890) was in the Department of Agriculture, and the offices of this branch of the service were in the upper floors of the building upon the north-west corner of Queen and Yonge Streets. With the establishment of the laboratory, the Board of Health moved into rooms on the top flat of the Wanless Building, a few doors below Queen Street on Yonge Street. The Board remained in these quarters until the present Parliament Buildings were opened, when the laboratory was moved to a room in the biological department of the University.
>
> "There was no special appropriation at first for the equipment and maintenance of

the laboratory, but this expense was met from an appropriation in the Department of Agriculture for the investigation of diseases of animals.

"Almost the first work undertaken by the Laboratory was the investigation of outbreaks of rabies. An interesting point about this was that in 1895 I saw the structures afterwards described as 'Negri Bodies' in the brains of rabbits dying from rabies, in dogs and in the brain of a child who had died of rabies in Hamilton. I thought the structures were degeneration products, and so described them at the British Medical Association in Toronto in 1897. In the annual report of the Association for that year there is a brief abstract of the finding.

"The work gradually extended to systematic bacteriological chemical examination of water supplies. The systematic examination of suspected diphtheria swabs, suspected typhoid fever, was begun by the laboratory earlier than anywhere else in America.

"An interesting study of a local outbreak of typhoid fever near Innerkip was made in 1896 when one of the earliest suggestions of the role of the typhoid carrier in the causation of circumscribed outbreaks of typhoid was made. In this epidemic the Widal test was made on all the cases and the contacts. Tuberculin and mallein were imported from the Pasteur Institute and for a few months the laboratory distributed the supply.

"Throughout this time, as head of the laboratory, I did all the bacteriology and chemical work without assistance except that of a boy to look after the animals and clean glassware."

In the laboratory he carried on alone, doing analyses of water and ice and milk, pathological sections of tissues of animals and the routine diagnostic bacteriology. He, among the first, did a series of tuberculin tests on cattle which were also being done in the Ontario Agricultural College at Guelph but there was no legislation as yet relating to "reactors".

In 1900 Professor Mackenzie resigned and was succeeded by Dr. John A. Amyot, who carried on, assisted by G. G. Nasmith, Ph.D., as chemist. Dr. Nasmith was subsequently appointed in 1910 Chief of the Laboratories of the City of Toronto. Dr. Amyot remained in charge of the laboratories until 1919, when he became Deputy Minister of Health at Ottawa.

In 1903 a section of the laboratory was moved to Berlin, Ontario, and remained there for six months carrying on experiments looking to the elucidation of the sewage problems of that town. The laboratories were moved from the Biological Building of the University of Toronto to more commodious quarters in the new Medical Building in that year.

The year 1904 saw the establishment of the first branch laboratory in connection with Queen's University, Kingston, under the direction of Dr. W. T. Connell.

At the request of Dr. McCullough, Dr. John A. Amyot recorded briefly the early history of the laboratory at the time when he assumed its direction.

"When I took over the laboratory in 1900 I was alone. I cleaned the glassware, fed the animals, made up the media and standard solutions, did the examinations, the results of which (1,250 that year) I reported in longhand. When we moved into the Medical Building we had both bacteriological and chemical assistants and a cleaner. We lacked a stenographer, but signalled to the Parliament Buildings with a white towel when we wanted one. This plan did not work well. In 1902 our first field work in sewage disposal was done in Berlin (now Kitchener). When we moved to 5 Queen's

Park the first Pasteur vaccinations were done, the vaccine used being sent daily by special delivery from New York. An experimental plant (for sewage and water) was established in Stanley Park; the laboratory in London was set up; and the first laboratory 'check-up' of a municipal water plant was done at Lindsay in connection with the 'Ozone' purification scheme there."

In 1911 a branch laboratory was established in London in connection with the Institute of Public Health. Laboratories were established at Fort William in 1919, at Sault Ste. Marie and North Bay in 1920, at Owen Sound and Peterborough in 1921, and at Ottawa in 1922. In 1927 the branch at Owen Sound was closed on account of the small volume of work and the proximity to London and Toronto.

Each of the laboratories is in charge of a full-time, competent physician and conducts public health laboratory work of all kinds. Thus Ontario's public health laboratory service has grown from one small laboratory to seven well-equipped units situated at strategic points in the province. These laboratories provide a free service to the medical profession and the public. In 1889 the laboratories examined 1,370 specimens, while in 1933 the total number of examinations was 350,966, an increase of 34,852 over the previous year.

In 1927 the opening of the new East Block of the Parliament Buildings made possible the accommodating of the Division with adequate headquarters. In 1930 a section of pathology was established for the purpose of meeting the needs of the general practitioner in rural districts and small communities, promoting the early diagnosis of various abnormalities in human tissues. In 1933, 3,675 specimens were examined.

In the development of the laboratory service an intimate relationship between the Provincial Board of Health and the University of Toronto was established and during the following years this relationship has been extended in the work of the various divisions of the Department of Health. During the period of his service as Provincial Bacteriologist, Professor Mackenzie served as Lecturer in Biology. In succeeding Professor Mackenzie as Provincial Bacteriologist in 1900, Dr. John A. Amyot, then Associate Professor of Pathology, continued his association with the University in that capacity and in 1910 was appointed Professor of Hygiene and Sanitary Science. In 1920 Dr. J. G. FitzGerald, Professor of Hygiene and Preventive Medicine and Director of the Connaught Laboratories, was appointed Honorary Consultant in Public Health Administration to the Provincial Board of Health, and in the same year Dr. Alan Brown, Associate Professor of Paediatrics, was appointed Honorary Consultant in Paediatrics. In 1922 Dr. W. B. Hendry, Professor of Obstetrics and Gynaecology, was appointed Honorary Consultant in Obstetrics; in 1927, Dr. Harold K. Box, of the Faculty of Dentistry, Honorary Consultant in Dental Services; and in 1934 Dr. Oskar Klotz, Professor of Pathology and Bacteriology, Honorary Consultant in Pathology. In 1933 Miss Elizabeth L. Smellie was appointed Honorary Consultant in Public Health Nursing.

Free Distribution of Biological Products

In 1914 the Board began a practical demonstration of the possibility of supplying to the people of Ontario biological products such as diphtheria antitoxin at prices much below those of commercial firms. Through the co-operation of the Anti-toxin Laboratory of the Department of Hygiene, University of Toronto, the Board was enabled to make arrangements for the supplying of antitoxin and vaccines at comparatively low prices. The demonstration was successful and in 1916, and subsequently with the continued co-operation of the University Laboratories, now known as the Connaught Laboratories, the essential biological products have been distributed without charge to the public. This free distribution has been of great public value. It has shown its effect particularly in the control of diphtheria, typhoid fever, smallpox, tetanus and other communicable diseases. More recently the addition of diphtheria toxoid for immunization of children against diphtheria has proved of great value in reducing the incidence and mortality of that disease. It may be worth while to point out that in pre-antitoxin days Ontario, even with her sparse population, had as many as 1,800 deaths a year from diphtheria. In 1933 there were only 40 deaths from this affection. Following the discovery of insulin, provision was made by the Government for distribution of this product to those unable to pay for it. This distribution was undertaken in 1923 and the amount used has increased each year until approximately thirty-five million units were required during 1933.

DIVISION OF MATERNAL AND CHILD HYGIENE

The efforts of the Department in the field of maternal and child welfare reached divisional recognition in 1920. A director, chief public health nurse, full-time paediatrician and a staff of public health nurses were appointed during that year. The Ontario Division of the Canadian Red Cross Society contributed substantially to the payment of the last mentioned group for a period of one year. The objectives of the Division were to increase municipal interest in a well-rounded local programme of health protection for the child from conception to school age and to ensure popular support for such a programme by educating the public to its necessity. This was attempted by demonstrations of the possibilities of such a scheme carried out in any community which manifested a willingness to be shown. A travelling child health clinic was made available for the smaller centres, to which the profession were invited to send not only their problem cases but also those who presumably were well, for advice as to future conduct.

The clinic further acted as a medium of instruction to the interested physician by affording him an opportunity to discuss with the paediatrician some of the newer ideas in infant and child care.

With the union of the Division in 1925 with the Division of School Hygiene, its scope was extended to include the school age group. The objectives of the Division, while, in the main, unchanged, have been broadened to include not only consultative service but a serious effort is made annually to inspire those re-

sponsible for the community service to maintain the highest standard possible under local conditions.

DIVISION OF PUBLIC HEALTH EDUCATION

As early as 1883 the importance of informing the public regarding the spread of communicable diseases and general health instructions was appreciated, as is evidenced by a reading of the reports of the secretary to the Board, Dr. Peter H. Bryce.

Publication of a weekly Health Bulletin was undertaken in 1883 and was continued as a monthly publication for a number of years. It was sent to physicians, to the newspapers throughout the province, and to all hospitals, public institutions and libraries. Supplementing the weekly bulletin, several pamphlets were prepared for distribution to the public on such topics as disposal of sewage, and information for municipal councils on the formation of local boards of health and cholera control. Utilizing the Industrial Exhibition in Toronto and the Provincial Fair at Guelph, a hospital pavilion was erected by the Provincial Board of Health and copies of the health pamphlets distributed. Dr. Bryce desired to illustrate the type of temporary building which could be erected quickly for the accommodation of contagious disease cases and which could be portable and easily disinfected. This exhibit was probably the first public health exhibit furnished by any provincial board of health in Canada. In 1892 the Provincial Board provided a sanitary exhibit at the World's Fair, Chicago. Dr. Hodgetts continued the educational work and greatly extended the health exhibits and the preparation of health literature.

In 1920 a Division of Public Health Education was established, which since has become one of the most important divisions of the Department.

VITAL STATISTICS

Prior to 1869 there was compulsory registration of marriages by the clergy in Upper Canada, and in Lower Canada registration of birth and deaths in parish churches. On July 1st in that year the Ontario Parliament passed an Act for the Registration of Births, Marriages and Deaths which provided that these would be registered for a fee by municipal clerks, who would make annual returns to the Provincial Secretary. Since 1870 there has been published an Annual Report of Births, Marriages and Deaths, this being the first important step towards systematic health work based on vital statistics. In 1892, Dr. Bryce was appointed Deputy Registrar-General, thus bringing this important division in close touch with the Provincial Board of Health.

In 1896 the Consolidated Act relating to Births, Marriages, and Deaths was passed. This Act required that every death must be registered before a legal burial could take place and that monthly reports of all deaths from contagious diseases must be returned to the Registrar-General by the Division Registrars of the province, numbering 777 at that time.

Coincident with the appointment in 1930 of Dr. J. M. Robb as Minister of Health, the Registrar-General's Branch was returned to the Provincial Secretary's Department.

DIVISION OF SANITARY ENGINEERING

The growth of the Division of Sanitary Engineering can be traced from the active work in 1883 of a committee on sewage and water supplies under the direction of Dr. William Oldright and Professor John Galbraith. Investigations and inspections of sewage disposal systems occupied much of their time. In 1888 the town of Brockville was the first to have installed a separate sewer system for storm water. In that year the Government constructed at the London Asylum, primarily for the purposes of study, a sewage disposal system in which intermittent downward filtration was used. Sanitation became one of the chief studies of the Board and during the following years sewerage and water problems were studied throughout the province. To meet the need of exact information concerning new types of equipment and processes, an experimental station was opened at Stanley Park, Toronto, in 1908. A series of publications embodying the results of investigations has been published.

In 1911 a sanitary engineer was appointed and given charge of the service, including the Experimental Station. One of the most important pieces of work undertaken by this service was the sanitary investigation of the international waters in 1912-13. An International Joint Commission had this duty in association with the United States Public Health Service, the Superior Board of Health of Quebec, and the State Boards of Health of New York and Michigan. All the waters from the Lake of the Woods to Cornwall on the St. Lawrence were thoroughly examined. The report forms the basis of a plan for the care of the sewage of certain large urban centres on the waters lying between the United States and Canada.

Control over municipal water and sewerage systems was obtained by legislation in 1895 by the requirement that all plans for waterworks and sewerage systems must be approved by the Provincial Board of Health and in 1912 legislation was passed requiring all proposed works to be approved by the Provincial Board before arrangements could be made for the necessary financing of the undertaking by the municipality. In 1902 the first field work was done in the disposal of sewage at Berlin (now Kitchener). The first laboratory check-up of a municipal water plant was made by the Board at Lindsay in 1911. In 1910 there were only 10 municipal water supplies provided with a purification system. By 1920, 42 per cent of the water of all municipal supplies was treated by filtration and 82 per cent was protected by chlorination. By 1933, 132 sewerage systems were in operation, with 30 activated sludge plants. A system of inspection of all water and sewage treatment plants is provided by this division. By 1933 the number of waterworks systems had reached the total of 281, with an increased number of treatment plants in service and more supervision being given to this field. One hundred and thirty-two sewerage systems were operating in 1933, and 31 disposal plants of the activated sludge type had been built.

The Division maintains a system of inspection and supervision over all water and sewage treatment plants in the province.

DIVISION OF INDUSTRIAL HYGIENE

In 1919 the National Research Council appointed a committee to study

industrial fatigue, with Professor J. J. R. MacLeod, then Professor of Physiology in the University of Toronto, as chairman, and Miss R. M. Hutton as secretary. Arrangements were made for a survey of industrial hygiene activities in the city of Toronto. Later this was made the subject of a publication entitled "Survey of General Conditions of Industrial Hygiene in Toronto, with Results of an Investigation into Lost Time due to Sickness". In 1919 also provision was made by the Department of Hygiene and Preventive Medicine of the University of Toronto for instruction in industrial hygiene for both graduate students in Public Health and undergraduate students in the Faculty of Medicine. In the following year a Division of Industrial Hygiene was established in the Provincial Board of Health.

During the following years this Division has made enquiries into the number and kinds of occupational disease and where they occur in industry in Ontario. These studies have been the basis for the addition to the list of diseases for which Workmen's Compensation is paid, namely, benzol, caisson disease, silicosis, grinders' phthisis, pneumonoconiosis and chrome poisoning. Important legislation has been enacted based on the findings of the Division. The Division is also responsible for the enforcement of the Regulations of the Department of Health relating to the sanitary control of lumber, timber and mining camps in Northern Ontario.

DIVISION OF PREVENTABLE DISEASES

Venereal Disease Control

Following the report of the Royal Commission appointed to study the control of venereal diseases in Ontario, legislation was enacted in 1918 and a comprehensive programme was undertaken. The need for a special division in the organization of the Board was soon evidenced and in 1920 the Venereal Diseases Division was formed. In 1924 it was incorporated into the Division of Preventable Diseases.

For the work of venereal disease control $115,000 was voted by the Province in 1920. This was augmented by the Provincial share of the $200,000 voted by the Federal Government for this work. Under this scheme 19 clinics were established in larger centres for the free treatment of venereal diseases, and a yearly appropriation of $100,000 has financed this activity since that time.

Tuberculosis

Under the leadership of Dr. Bryce, attention was early focused on the problem of tuberculosis. It is interesting to record that emphasis was laid on the communicability of the disease, its transmission through milk, its control by proper care of sputa, and the value of institutional treatment.

In 1897 the Muskoka Cottage Sanatorium was established, following the plans of the Trudeau Sanatorium, which had been erected twelve years previously. Since that time twelve sanatoria for the tuberculous have been opened in the province. In 1912 tuberculosis was made a notifiable disease.

From the beginning the sanatoria were given Provincial aid. A sum not to exceed $4,000 was allowed towards the cost of building an approved sanatorium, and when in operation they received aid according to Schedule A (Public

Hospitals). In 1912 Provincial aid with respect to indigent patients in sanatoria was set at $3.00 per week, and this was confirmed in the first Sanatorium for Consumptives Act passed in 1913. In 1919 the amount was increased to $3.50 per week, and in 1920 the present rate of 75c per day was passed, with the municipality contributing at the rate of $1.50 per day.

During 1931-1932 under an Unemployment Relief Scheme the Dominion Government, in conjunction with the Province, undertook to pay 35 per cent of the cost of construction of approved additional sanatoria accommodation. This building programme resulted in an increase in sanatorium accommodation of approximately 700 beds. The sanatorium provision in 1933 was 3,146 beds available for tuberculosis patients, or, expressed in the terms of the number of deaths, 2.03 beds per death. The importance of early diagnosis was recognized, but it was not until 1924 that the first travelling diagnostic tuberculosis clinic was established. Annual visits are made to some thirty centres in all portions of the province.

Epidemiology

The reporting of communicable diseases was early made a requirement in the Public Health Act and regulations were issued relating to their control. An extensive revision of these regulations was made in 1931.

The policy of free distribution of biological products has resulted in a very marked reduction in the incidence and mortality of certain diseases. In 1929 provision was made for the distribution of convalescent or immune serum from poliomyelitis cases to be used in the treatment of early cases of this disease. This has been continued since that time.

DIVISION OF HOSPITALS

Following the report of the Royal Commission on Public Welfare in 1930, the administration of the hospitals of the province was transferred to the Department of Health. Through its Hospital Division the Department has extended its service to the community by the extension of Provincial grants to public hospitals, Red Cross outposts, sanatoria, and hospitals for incurable patients. A new Public Hospitals Act was passed and became effective in October, 1931. It embodied many new advantages for general hospitals, providing for the care of indigent new-born babies, hospital treatment of indigents from unorganized territory, and power to make regulations from time to time to meet the changing hospital requirements. The prevention and cure of mental illness has been a major consideration of this Division.

The history of organized public health as conducted by the Provincial Department during the past 52 years reveals the evolution of the modern public health movement. From the small beginning in 1882, with a part-time secretary and a budget of $4,000, the work in its present form requires eight essential administrative divisions, the active participation of 650 medical officers of health with their respective local boards, and a budget for the fiscal year ending October 31, 1934, of $7,249,470.00, of which $881,150.00 was the appropriation of the Department of Health and $6,368,320.00 that of the Hospitals Division.

The Advisability of the Standardization of the Vitamin Content of Certain Foods*

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DURING the past decade the emphasis in nutrition has been placed on the vitamins. While the advance in our knowledge of these substances has been spectacular, perhaps an undue proportion of our thought has been devoted to this one aspect of nutrition. No one can deny that vitamins are essential constituents of human dietaries and that diseases result from deficiencies of the vitamins, but other dietary factors should receive adequate consideration.

As in many other instances, manufacturers have utilized scientific progress to enhance profits and we have been deluged with announcements of food products for which high vitamin contents are claimed. Frequently these claims have been based on data originating in the advertising department and not in the laboratory. A purely hypothetical illustration may be used. A bread company wishes to keep pace with its competitors by marketing a bread allegedly rich in vitamins. It is well known that wheat germ is generally a good source of at least four vitamins. Accordingly wheat germ is added to the dough. Consequently a new brand is advertised as containing four vitamins but results of actual determinations on the bread itself are not made available, if they were ever made.

In addition to customary foods a number of special preparations have been advertised as essential to provide the vitamins said to be deficient in modern dietaries. It is a debatable question as to whether these vitamin supplements are essential. We do not know how much of any particular vitamin is required by human beings and most of the claims regarding the deficiencies of present-day dietaries arise from guesses and not from actual data. It is certain that our diets in Ontario are sufficiently good to prevent practically all the vitamin deficiency diseases. A very safe viewpoint has been expressed by the Council on Pharmacy of the American Medical Association†:

> "Ordinarily there is no reason why a properly selected diet should not afford an adequate supply of the requisite vitamins. Furthermore, there is no evidence of any noteworthy prevalence in this country of conditions that might properly be ascribed to a lack of one or more vitamins. However, it must be admitted that under circumstances bringing about a highly restricted dietary regimen and leading to 'one-sided' diets, a relative shortage of some of the vitamins does at times arise. In almost all such instances the situation can be properly corrected by prescription of appropriate foods. Occasionally a corrective result may be more effectively secured by the administration of products especially rich in the desired vitamin; for example, cod liver oil as a dietary adjunct in the prevention or treatment of rickets, and yeast preparations in the relief of pellagra. The clear indications for such specific vitamin therapy are still few in number."

**Presented at the Christmas Meeting of the Laboratory Section, Canadian Public Health Association, Toronto, December, 1934.*

†New and Non-official Remedies, 1934. Am. Med. Assoc., Chicago, 1934.

In the Department of Physiological Hygiene we have been interested during the past year in a chemical method for the estimation of vitamin C. The procedure employed is a modification of that proposed by Birch, Harris and Ray.* Some data resulting from this work will be used to illustrate certain points in connection with the question of vitamin standardization. In Ontario we frequently utilize canned tomato juice as a source of vitamin C. It is interesting to consider the vitamin C content of some tomato juice purchased in retail stores (Table I). The second column of Table I shows the

TABLE I

VITAMIN C CONTENT OF SOME CANNED TOMATO PRODUCTS

Source	International units per cc.	Mg. of ascorbic acid per one cent
Brand A tomato juice	1.7	5.0
" B " "	3.6	....
" C " "	5.0	12.5
" D " "	3.8	8.0
" E " "	4.6	10.7
" F " "	4.4	10.8
" G " " (for infants)	1.9	1.3
" H whole tomatoes, juice extracted	4.0	10.0
" I " " " "	5.6	13.3
" J " " " "	4.4	12.5
" K " " " "	4.0	8.0

TABLE II

ASCORBIC ACID IN CANNED STRAINED TOMATOES PREPARED FOR INFANT FEEDING

(All values in milligrams per cent)

Brand A:	9.2	10.0	10.0	9.6	10.1	11.2	9.8	11.0
Brand B:	5.6	5.6	9.0	8.6	10.4	5.4	11.1	8.0

Average content, raw tomatoes	27
" " canned tomatoes	22
" " tomato juice	19
" " Brand A	10
" " " B	8

TABLE III

ASCORBIC ACID IN JUICE FROM INDIVIDUAL LEMONS AND TOMATOES

(Milligrams per cent)

Lemons	50	55	42	65	57	47
Tomatoes	18	24	36	29		

amount of vitamin C (ascorbic acid) which is purchased for one cent on the basis of current retail prices in Toronto. It is apparent that the amount varies markedly between different brands and, indeed, between different cans of the same brand. Mothers have been urged in advertisements to use specially strained vegetables for infant feeding. Table II shows the amount of vitamin C in samples of strained tomatoes from two brands. Here again a marked variation is apparent. Table III shows the amount of vitamin C in juice from individual lemons and tomatoes.

*Birch, Harris and Ray, *Biochem. J.*, 1933, **27**: 590.

These two types of products frequently used for providing vitamin C cannot be relied on to provide constant amounts. The question at once arises as to the desirability of standardizing them so that the consumer will be guaranteed a reliable source of the vitamin. No one will contend that such a procedure is inadvisable. However, a series of difficulties in carrying out such a plan become apparent.

Unfortunately nature herself is not constant in providing vitamins. Foods vary markedly in their vitamin content. Some figures for the vitamin C contained in individual lemons and tomatoes indicate this fluctuation. With such natural variations it might seem difficult to have foods standardized for vitamin content. A similar problem has been successfully handled, however, in the cases of the fish liver oils (cod and halibut). These fluctuate widely in the content of both vitamins A and D, yet the pharmaceutical houses blend low and high quality oils and market ones which fulfil definite requirements. The same procedure could be followed for other foods, such as tomato juice, particularly those brands advertised for infant feeding.

The most serious difficulty lying in the path of vitamin standardization is the method of assay required. For two vitamins, A and C, chemical methods are available which, within limits, are reasonably useful to determine vitamin content. But, even in these instances, and for all other vitamins, biological methods must be employed to secure reliable information. These procedures involve feeding experiments on small animals and are both time-consuming and expensive. This difficulty can easily be illustrated.

In many communities vitamin D milk is now being sold. For this purpose milk is irradiated with ultra-violet lamps and a sterol in the milk is activated to form an anti-rachitic substance. Clinical tests with such milk show it to be useful in the prevention or treatment of rickets. How may one be sure that vitamin D milk sold by a particular dairy is as potent as is claimed? To determine the vitamin D content only one method is available, a feeding experiment on rats. The procedure may be briefly described. The young rats used should be obtained from a healthy and vigorous colony. The stock breeding diet must be uniform and so low in vitamin D that the young animals do not possess any reserves of this vitamin. At the age of three to four weeks they are placed on a special rachitogenic diet. At the end of three to four weeks' feeding of this diet they will have discernible rickets. The rats may then be divided into groups and the groups given various doses of the substance to be tested. The curative effects of the substance are determined by X-ray examination or by direct inspection of the bones after two weeks.

It is evident that an assay of a sample of milk for vitamin D is expensive and requires some time. It is equally evident that dairies could not control the vitamin D content in the same way that fat is handled. A fat determination is so simple and rapid that each lot of milk may be tested before bottling, a procedure impossible in the case of vitamin D. The best arrangement that can at present be seen for vitamin D milk is that dairies use a standardized process which has been shown to give potent milk and the process be operated

in an absolutely uniform manner. Samples taken from time to time could be assayed in a competent laboratory.

This difficulty, which is equally serious in the case of all the vitamin foods, is sufficiently great that one might doubt whether any sort of vitamin standardization is possible. However, in a few cases standardization is now carried out and in others it could be done. I would like to suggest two regulations which could be used to safeguard the public:

1. No advertising claims should be permitted for vitamins in any food unless the claims were based on actual determinations on the food in question.

2. A minimal vitamin content for any food should be fixed. This value should be stated on the label and in advertising. For example, a pint of vitamin D milk should contain at least 90 units of vitamin D. This value should be stated on the cap and the actual content should equal or exceed this value. If a sample of milk were found to contain less than the amount, the dairy would be liable for prosecution. This same arrangement is equally applicable to tomato juice, infant foods, and indeed to all articles for which special claims of vitamin activity are made.

Daylight Glare in School Rooms

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AND

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THE ability of children to see writing on the blackboard in the school room may be seriously limited when light reflected from the board is intense.

One of the most common causes of interference with vision in schools is the reflection of daylight at eye level. The glare effect of the reflected daylight depends upon the following factors: (1) the amount and distribution of daylight reaching the board, (2) the amount of light reflected from the surface of the board, (3) the direction of the reflected light, (4) the situation of the desks in relation to the direction of the reflected light, and (5) the contrast between the background and the writing.

One or more of these factors may be varied in order to reduce daylight glare.

(1) The amount of daylight may be controlled by the use of a flexible system of blinds. Venetian blinds or blinds mounted at the centre or bottom of the window may prove satisfactory, particularly if local blackboard lighting units are available.

(2) The glare effect of the reflected daylight may be reduced by resurfacing of old blackboards.

(3) The beam of reflected light may be sent above or below the eye level of most of the children by tilting the boards.

(4) The desks may be arranged so that they are outside those areas in which the daylight glare is most severe.

(5) The contrast between the board and writing may be increased by weekly cleaning with coal oil and by the use of good greenish-black slate rather than the grey types.

In order to study the incidence of daylight glare in several schools and to determine whether or not the glare could be reduced by simple procedures, a survey was made of the glare conditions in four Ontario public schools and a re-investigation was made in one school after the following measures had been taken:

(1) The boards in all the rooms were cleaned with coal oil.

(2) The boards in eight classrooms which had been in use for many years were resurfaced by scraping.

(3) The desks in most of the classrooms were shifted out of the line of the reflected daylight and in one classroom the desks were faced toward the side blackboard.

(4) Adjustable blinds were introduced in one classroom.

The method used to measure the extent of the glare was to write a standard wavy line on each blackboard and from each desk to make an estimate of the area of the board on which the waves were rendered invisible through glare conditions.

RESULTS

The results show that in one of the schools as many as 47 per cent of the total number of pupils were subjected to daylight glare while in the other three schools the glare was much less severe (Table I). In the school with the most

TABLE I

GLARE CONDITIONS IN FOUR ONTARIO PUBLIC SCHOOLS

School	Percentage of total number of pupils subjected to daylight glare	Average percentage of the blackboard on which writing was invisible from the glare area
F	47	27
B	18	15
S	4	15
D	0	0

widespread glare conditions, as much as one-third of the blackboard was useless. The percentage of pupils affected by the glare conditions was judged from the percentage of desks in the glare area in each room.

After certain simple precautions were taken in school F, the percentage of the total number of pupils subjected to glare in the whole school was reduced

from 47 to 9 and the area of the blackboard rendered useless through the glare conditions was reduced. The decrease in the amount of glare in school F, when the boards in all the rooms were cleaned each week with coal oil and various additional changes were made in some of the classrooms, is shown in Table II.

TABLE II

GLARE CONDITIONS AFTER REMEDIAL PROCEDURES

Precautions taken	Number of rooms	Percentage of total number of pupils subjected to glare		Average percentage of blackboard on which writing was invisible from glare areas	
		Before	After	Before	After
Resurfacing blackboard ..	8	50	6	24	20
Facing seats to side blackboard.....	1	50	0	33	0
Flexible system of blinds..	1	45	0	30	0

DISCUSSION

The data obtained from this study indicate that many children in a school may be subjected to a glare effect from the blackboard. If such is the case, steps should be taken to minimize the handicap. It should be the responsibility of the teacher to utilize properly the lights and blinds provided, to adjust the seating or writing on the board to avoid glare areas, and to keep the board clean. The school board should make sure that each room is properly equipped with windows suitably shaded and with tilted blackboards with a good dark surface and properly illuminated.

CONCLUSIONS

A study of the daylight glare in four Ontario public schools shows that it may seriously interfere with vision but that it can be effectively reduced by certain simple measures.

Activities in a Province-Wide Programme for the Control of Tuberculosis*

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THE first step in a provincial programme for the control of tuberculosis is a publicity campaign. This campaign, making known the facts relative to the unnecessary loss and suffering from the disease, should be aimed at a public demand for action. Such a demand is created by the championship of the press and the backing of leading citizens popularly known to have the public welfare at heart. A humanitarian appeal on behalf of the unfortunate sick is the foundation upon which a successful campaign rests.

In Saskatchewan this publicity campaign was begun by the late Dr. M. M. Seymour, then Provincial Health Officer, and Dr. George Porter, then Secretary of the Canadian Tuberculosis Association. Small tuberculosis organizations were formed throughout the province for the purpose of educating the people regarding tuberculosis and for the purpose of raising funds for building a sanatorium. This was followed in 1911 by the formation of a Provincial Anti-Tuberculosis League under the presidency of Mr. Peter McAra. This, a voluntary organization, raised some $97,000.00 by public subscription as a start for the building of the first sanatorium unit at Fort Qu'Appelle, which unit accommodated sixty patients.

The task of building adequate sanatorium accommodation proved too great for voluntary effort. Under the pressure of need for accommodation for soldiers returning from overseas, the Board of Directors of the League, under the leadership of Mr. A. B. Cook, secured the financial assistance of both the Provincial and Dominion Governments in order to extend and complete the first sanatorium at Fort Qu'Appelle.

A commission was appointed in 1921, under the chairmanship of Mr. A. B. Cook, to survey the whole problem of the treatment and control of tuberculosis. Following the report of the commission, the government, the municipalities, the medical profession, and other interested bodies agreed to cooperate for the dual purpose of adequately caring for those already sick and of preventing the spread of this disease. At this time the government undertook to provide further future sanatorium accommodation and a per diem hospital grant of one dollar per patient per day.

Then came the realization by the public that few victims of this disease could financially afford the prolonged treatment required. As a result of this

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a pool was formed in 1923 to care for indigent patients from rural municipalities. A similar pool was formed in 1925 by the urban municipalities to care for indigent urban patients. By 1928, roughly 70 per cent of the population of the province were providing for the care of their indigent tuberculous sick through one or other of these pools.

At this time not more than 10 per cent of those who fell sick with tuberculosis were able to provide for the cost of their own treatment. Realization of this fact on the part of the public led to resolutions being passed by municipal bodies and other organizations asking the Provincial Government to provide for treatment at the expense of taxes. This necessary financial provision was realized when the Sanatoria and Hospitals Act of 1929 was passed by the Provincial Government to provide for the treatment of all tuberculous sick at the expense of taxes. This provision for adequate sanatorium accommodation and for adequate financing of the cost of treatment marked the accomplishment of the second essential in the anti-tuberculosis campaign.

From the very inception of the anti-tuberculosis organization in Saskatchewan examination of applicants for treatment revealed the unfortunate fact that the great majority of patients were discovered in the advanced stages of the disease. In fact, 10 per cent or more were actually hopeless. It was readily recognized that if the tuberculous sick were discovered earlier in the course of their disease, a shorter period of sanatorium care would be required, lives and much needed resources would be saved, and the needless spread of the disease by these advanced cases would be prevented.

The necessity for early diagnosis led the Commission to recommend the establishment of clinics at the sanatoria, at medical centres, at all cities, and at other necessary centres. These clinics were supplemented by the services of two travelling diagnosticians who visit the districts far removed from the clinics and examine persons whom the local doctor or health officer suspects of having tuberculosis. The provision of these necessary diagnostic facilities represented the accomplishment of the third phase of the anti-tuberculosis programme.

The segregation of the tuberculous sick in sanatoria for treatment, and their education regarding the prevention of the spread of the disease, resulted in a reduction in the infection in the child and young adult population of the province. Recent examination of Normal School students showed evidence of infection in 23 per cent as indicated by tuberculin tests, compared with 76 per cent in the same group in 1921. Likewise, a recent survey of infection in school children in the city of Saskatoon showed an incidence of 14.08 per cent, as indicated by tuberculin tests, compared with 51 per cent in the children of the same schools in 1921. Furthermore, since 1931, when it may be considered that the full burden of treatment was assumed, there has been a reduction each year in the number of new active cases discovered. At the same time an increasing number of people have been examined for tuberculosis each year.

The realization that the death rate can be reduced, that infection can be reduced, that there is no tuberculous disease without infection, that every case

comes from another case, inevitably drives a progressive anti-tuberculosis organization to the conclusion that in order to save lives and to conserve resources they must institute a programme to eliminate infection and to reduce next year's crop. To the initial purpose of saving the sick now is added the final endeavour of protecting the well. This is the fourth phase in the anti-tuberculosis programme: clearing up infection in the province.

Briefly, the present anti-tuberculosis programme in Saskatchewan consists of the segregation, education and treatment of all spreaders and sick; the discovery and early treatment of all those infected by these spreaders; and the education of the entire people regarding the prevention of tuberculosis.

THE PRESENT PROGRAMME IN SASKATCHEWAN

Provision for Treatment

In the three years 1931, 1932 and 1933 conditions might be considered stabilized inasmuch as there has been little increase in the number of patients treated. Throughout these three years we have continuously occupied an average of 2.3 beds for every death which occurred during the previous year. Our beds have accommodated all types and stages of tuberculosis: both children and adults; both pulmonary and non-pulmonary; both hopeful and hopeless. During this period 13.2 per cent of our beds have been occupied by children fourteen years and under; 19.4 per cent of the beds have been occupied by non-pulmonary forms of tuberculosis. The average number of beds occupied during this period was 776, of which 721 were provided in the sanatoria and the remainder in overflow accommodation in general hospitals.

The average duration of treatment during this three-year period has been ten months. This is approximately the same period of treatment that was given for several years in this province before free treatment was available.

During the period 1917 to 1933, among 4,505 treated cases discharged alive, 907 deaths have occurred, or 20.13 per cent; and 312 patients have relapsed, or 6.9 per cent. During 1933, with 3,477 living ex-patients known to be resident in Saskatchewan, 2,050 review examinations were made.

Free treatment and diagnostic clinics have led to earlier discovery of the disease. In 1928, prior to free treatment, 14.3 per cent of our patients were discovered in the incipient stage. In 1931, after three years of free treatment, 25.9 per cent were discovered in the incipient stage; in 1932, 24.7 per cent, and in 1933, 25.4 per cent.

Diagnostic Facilities

With a population estimated at 933,000 in 1933, spread over an area of approximately 400 miles in each direction, we have clinics established at nine centres, three of which are at the sanatoria. This service is supplemented by the employment of two travelling consultants released from the staffs of the sanatoria during the summer months. These travelling diagnosticians visit

approximately three hundred physicians in the more remote districts of the province not adjacent to one of these nine centres.

Programme for Clearing up Infection

The first, the simplest and most obvious step in such a preventive programme is the elimination of bovine infection. The proportion of tuberculosis due to bovine infection naturally varies in proportion to the incidence of tuberculosis among cattle. In Saskatchewan when the dairy herds of the cities were tested the incidence averaged about 15 per cent reactors. Now, with the city, town and many of the village herds cleaned up, the infection is largely confined to the rural areas where it is found that the average incidence of tuberculosis among the cattle is from one to two per cent. At the present time, roughly one-third of the people of the province of Saskatchewan are drinking milk from tested cows. Throughout the remaining two-thirds of the province, although at present money is not available for the formation of restricted herd areas, there is a steady movement progressing to have individual herds tested for the protection of the private family. The greater part of the city population enjoy the additional protection of pasteurized milk.

The more important and far more difficult problem in prevention is that of the identification of human spreaders who have symptoms or signs of the disease, but who have not yet fallen ill. These have not yet been forced to seek treatment in a sanatorium. There are several important groups in which these unidentified spreaders will be found, and there are several ways by which they may be selected.

(1) Physicians, knowing that patients will be treated without any cost immediately they are referred, have in their routine practice and without assistance discovered 445 or 1.6 new cases in 1933 for each death that occurred in the province during 1932.

(2) We have found that when physicians are encouraged to refer their tuberculosis suspects to one of the diagnostic centres of the anti-tuberculosis organization, this large class can be re-examined and sifted over at very little cost, and the spreaders can be selected for treatment.

During the last three years, in addition to those definitely diagnosed, 7,239 suspects were referred to the various services of the League by the approximately five hundred physicians in the province. This is just over seven suspects for each death from tuberculosis during the three years 1930, 1931 and 1932. Of these suspects 898 or 12.4 per cent were found to have active tuberculosis, and were referred to the sanatorium for treatment.

(3) Those persons who have been in contact with an active case, that is, the other members of the family, or the intimate associates, are also a worth while group requiring investigation. Such persons are in a different class from those whom physicians suspect of symptoms, inasmuch as most of them are not yet aware of any signs or symptoms which in any way alarm them. They have had a bad experience with tuberculosis—they have lost a parent, brother

or sister—and they are trying to forget. If left to follow their own inclinations, they will not be examined promptly because of an unreasonable dread.

Under the present system of medicine, where the patient takes the responsibility for initiating action to protect his health—that is, where the doctor waits to be called to the patient—the majority of these contacts of tuberculous persons would not seek an examination until steadily failing health forced them to do so, in which case the result would usually be another advanced case of tuberculosis.

In Saskatchewan, in cities where there is a full-time health officer, the examination of these contacts is initiated by the City Health Department, which arranges for their examination at a clinic provided by the Saskatchewan Anti-Tuberculosis League. In all other cities, towns and rural areas the examination of these contacts is initiated by the League. This is usually done with little or no difficulty. If the family lives in the vicinity of a clinic or sanatorium the contacts are examined there free of charge. In areas remote from sanatoria and clinics, and outside the jurisdiction of a full-time city health officer, the League requests the family physician to examine the contacts of each case discovered by him and admitted to the sanatorium. The League pays him a small fee to cover the cost of examination and his travelling expenses,

In the years 1931, 1932 and 1933 in Saskatchewan, 8,786 contacts were examined. Of these, 655 or 7.6 per cent were found to have active tuberculosis and were referred to the sanatoria for treatment. Thus, for each death that occurred in the years 1930, 1931 and 1932, there were 8.6 contacts examined.

(4) Certain occupational groups, for instance nurses, are highly affected by the disease. The proportion of nurses who break down in training is next in frequency among our white people to the proportion of children in contact families who develop tuberculosis. This is probably due to the fact that nurses are exposed to frequent and larger doses of tuberculous infection from unsuspected sources. The need for examination of nurses in training is therefore nearly as great as that of examining children in contact families.

In 1933, 5 per cent of all patients under treatment in the sanatoria were nurses or nurses in training. The incidence of breakdown among nurses in training in general hospitals during the period 1930 to 1933 was 12.7 per thousand. This is twelve times the incidence of tuberculosis morbidity among the general population, which was one per thousand, by our method of case finding but without general examination. It is eight times the incidence found among 3,376 Normal School students—mostly females and of approximately the same age group—who were examined by physical and radiographic methods in the same years. The incidence in this Normal School group was 1.5 per thousand.

(5) Those classes which, apart from contact with active cases, are predisposed to tuberculosis, must receive consideration. Primarily, there are certain racial groups, such as Indians and half-breeds. In 1931 throughout Canada the tuberculosis death rate among Indians was seven-and-a-half times

that in the white population, while in Saskatchewan the rate among these people was approximately fourteen times as great as among the whites.

The examination of the children in Indian boarding schools in Saskatchewan last year revealed the fact that 6.96 per cent had tuberculous lesions. This is practically the same proportion of active cases as is found among children in white homes where there has been contact with an active case.

(6) Predisposing occupations, such as quartz gold mining, which are a problem in the industrial provinces, are as yet of importance in Saskatchewan only among immigrants from mining areas.

These, then, are the larger groups in which will be found a higher proportion of tuberculous persons spreading the disease.

Protection of Infants

(7) A problem naturally developing in a programme to clear up infection is the provision of a preventorium for the protection of infants born of tuberculous mothers. Among approximately 750 patients under treatment in the Saskatchewan sanatoria we find that there are approximately ten babies born each year to sick tuberculous mothers. These babies are healthy at birth and are free from tuberculous infection. If removed from the mothers immediately after birth and cared for apart from the mother or other possible sources of infection, they develop into healthy children. During the past seven years 36 children who had not suitable homes have been cared for in the preventorium at the Fort Qu'Appelle Sanatorium. Of these babies only one has since developed tuberculosis, and this case was due to contact after leaving the preventorium.

By initiating examination in highly infected groups with the available diagnostic facilities described above, 2.9 new cases have been discovered during the past three years for each death from tuberculosis during the period 1930, 1931 and 1932.

It should be pointed out here that, although during this period 2.9 new cases have been discovered for each death that occurred, some of these cases did not require sanatorium treatment; a few refused treatment, so that, as mentioned before, 2.3 beds per death were actually occupied during this period to care for all cases who required treatment. Of these, 1.6 cases were diagnosed directly by physicians and the remainder through the assistance of clinics, consultants, etc.

Programme for Education and Publicity

However fundamental the facilities for treatment, diagnosis and follow-up care, of equal importance and much more difficult of attainment is the education of the mass of the people. To the extent that the public are convinced that tuberculosis is curable and preventable, just so far will they avail themselves of facilities for its early diagnosis and care, and will they be willing to pay for the cost of maintaining the programme for its control and eradication.

Saskatchewan's most important single effort is the educational campaign

of the Tuberculosis Christmas Seal Sale. For every ten thousand dollars in cash which this campaign raises to prevent the disease, perhaps fifty thousand dollars' worth of educational work is done.

Apart from this campaign which concentrates on the Christmas season, opportunities for missionary work present themselves from time to time throughout the year. Of the very first importance is the education of the taxpayer. On the Board of Directors of the Saskatchewan Anti-Tuberculosis League there are representatives of both the Rural and Urban Municipal Organizations. It is the duty of these representatives to keep their members informed. At the annual meeting of their respective organizations they give an account of the work of the League during the year, the progress that has been made in the eradication of the disease, and what in the way of health protection these taxpayers have received for their money.

Opportunities are also afforded to give addresses to conventions of school trustees, of hospital authorities, of medical organizations, of service clubs, fraternal organizations, Local Councils of Women, Daughters of the Empire, Homemakers, Catholic Women's Clubs, and other church organizations.

In Saskatchewan we have supplemented this effort to interest leading organizations by the use of a moving picture which dramatically portrays how tuberculosis is treated in our province, and at the same time presents in story form the details of our programme for prevention. The various theatres in the province have been consistently generous in showing this picture, some theatres having done so more than once. The possibility of using such a film is illustrated by the fact that we were able to have this film shown as one of the features in a tree-planting car of the Canadian Forestry Association which toured the province in 1933.

Radio talks have been given over the four Saskatchewan broadcasting stations by officials of our organization and by other persons who are interested in the eradication of the disease.

In addition to this general educational programme, every attention must be given to special groups. The medical profession, which is the backbone of the anti-tuberculosis organization, must receive special consideration. To this end the League provides a number of short internships each summer at our three sanatoria. These are for undergraduate medical students and are without remuneration. In addition we take on our staff a limited number of recent graduates at a small salary for a period of six months. In this way practically every young man studying medicine in the province of Saskatchewan has a short internship at one of the sanatoria before or after graduation. During that time he sees as many various cases as he would normally see in the first ten years of his general practice. He has also become familiarized with the treatment of tuberculosis and the part he will be expected to play as a general practitioner in the programme of prevention.

Nurses also should be specially educated in tuberculosis, so that they will make their contribution to the campaign. With this in view we accept invi-

tations to affiliate with small training schools, and continuously give post-graduate courses with a small salary at our three sanatoria.

During the past year twenty-two medical students have received instruction for longer or shorter periods, and forty-two nurses have received diplomas for the three months' post-graduate course at our three institutions. Seven affiliate nurses have received instruction.

We go even farther than this in our educational campaign. We make a strong bid for the interest and support of the teaching profession. We consider that the most practical way to attain this end is by means of special instruction in the Normal Schools, and by physical and X-ray examination of all Normal School students. For the past four years we have examined the students in the three Normal Schools in the province—3,376 students altogether—and found five cases which required treatment and ten which required observation.

At the same time we have given special instruction to this group, remembering that in the next few years practically all the children of the province will come under their tuition. We have made a special effort to show them in what way they can co-operate with us in the eradication of tuberculosis.

In 1933, with the co-operation of the Department of Education, the League sent a lesson on tuberculosis to each public school in the province. The teachers were invited to teach this lesson to their children and substantial cash prizes were offered for the best essays submitted by pupils in grades V to VIII. The response was excellent and it is felt that a great deal of instruction was given that will be of benefit in protecting the next generation.

Results

As a result of the operation of this programme, with facilities for free treatment during the past four years, there has been a reduction of 25 per cent in the tuberculosis death rate. There has also been a reduction in the number of new active cases discovered—from 1,143 in 1931 to 879 in 1933. The proportion of early cases has increased from 14.3 per cent in 1928, prior to free treatment, to 25.4 per cent in 1933.

The infection among children and young adults in 1934, indicated by the tuberculin test, as compared with a survey made in 1921, shows a reduction in the young adult group from 76 per cent to 23 per cent, based on examination of normal school students, and a reduction in the school age group from 51 per cent to 14.08 per cent.

Treatment of Creamery and Cheese Factory Wastes

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IN the early days of the dairying industry in Ontario it was the practice to locate factories in close proximity to water or on low grounds where ample water could be secured with a minimum of effort. In recent years such locations have been avoided and many of the new factories are more suitably situated as regards drainage.

When factories are located on low wet grounds, it is necessary in order to provide treatment to construct a sump to collect the wastes and then pump or remove the wastes by a tank wagon. In factories where the drainage is satisfactory a sump is also essential, and it must be large enough to be used as a storage tank. Two factors in the treatment of these wastes can be controlled by such a tank. The wastes from these tanks are discharged intermittently. The treatment plant for the maximum rate of discharge would of necessity be much larger and more costly than if the flow were regulated by a storage tank, so that the treatment would be uniform and continuous over twenty-four hours. A storage tank also balances the temperature. Temperature plays a very important part in biological processes. A rush of heated liquid will invariably increase the odour and, where a sufficient quantity of heated liquid is discharged, will interfere with the digestion of the liquors. In some plants the utensils and sometimes the floor are flushed off with practically boiling water from a hose. If discharged directly to a treatment plant, this hot liquor interferes with the process and gives rise to bad odours. If it is discharged to a storage tank before it goes to the treatment plant this difficulty is obviated.

The wastes from dairy plants may be divided into three classes: (1) cooling water, (2) wash water, and (3) buttermilk and whey. Cooling water, being practically free from organic wastes, can generally be re-used after cooling, or used to dilute the other wastes where the concentration is such that dilution is necessary before treatment can be undertaken. The water used in washing floors and equipment contains milk from spillage and from the cans, cooler, pasteurizer, etc., in addition to soap and washing compounds. The milk content of wash water varies from ½ to 4 per cent, usually averaging 1.5 per cent. The volume of wash water varies from approximately the volume of the milk treated to four and five times that amount.

The experiments conducted by the Ontario Department of Health at Belmont showed that the milk treated at that plant ranged from 40,000 lbs.

in the winter to 125,000 lbs. at the height of the producing season. The volume of waste produced varied from 30,000 gals. to 60,000 gals., 90 per cent of which was discharged between 7 a.m. and 5 p.m. There was a heavy flow from 7 a.m. to 10 a.m. when the cans were being washed, and another from 3.30 to 5 p.m. when most of the washing was being done.

Buttermilk and whey are the by-products of these factories. Some plants treat the buttermilk to recover the casein and the resultant whey is a by-product which is difficult of disposal. The general practice is to use these wastes as hog feed. Some factories have established piggeries to help in disposing of this waste. These piggeries would be a satisfactory disposal of this waste if properly maintained, but the tendency is to neglect them, with the result that conditions beggar description. It is preferable to have the buttermilk and whey returned to the various farms than to concentrate the feeding of a large number of hogs in the near vicinity of the factory, with a resultant nuisance. Where it is impossible to dispose of these wastes as hog feed, it is necessary to dilute the wastes fifty-fold to bring the solution within the working strength of a treatment plant. This necessitates a much larger treatment plant, and it would be more satisfactory and probably more economical to bonus farmers to take the buttermilk and whey to their farms.

In designing a treatment plant for a dairy factory, there are several determining factors: (1) the type of factory; (2) the location in regard to other dwellings or industries; (3) the character of the soil, including topography and gradient; (4) the minimum volume, velocity, and location of neighbouring streams and condition of the water in them; and (5) the volume and concentration of the various waste liquors. It is also necessary to bear in mind the character of these wastes, their high putrescible nature, the presence of fats and casein, and their tendency to become acid in reaction, which inhibits biological processes which require a more neutral medium for optimal development.

The available methods of treatment can be roughly divided into three classes, which are usually closely allied. Although no single method yet evolved gives an entirely satisfactory effluent, a combination of various treatments may give results. No method or combination of methods can give satisfactory results without careful supervision and operation. There is a tendency to instal equipment and consider the installation the end of nuisance troubles. It is the successful operation of the equipment which will prove the end of a nuisance.

The basic methods are physical, biological, and chemical. Under physical methods are filtration either through sand beds or straw mattresses, disposal in seepage pits or tile drains, and broad irrigation.

Physical Methods

Sand filtration alone is of little use, as the solid removal is not over 25 per cent even with as low a dosage as 40,000 gallons per day. In addition the

putrescible matter in solution is not materially affected. The filter is rapidly clogged by fat and casein, requiring cleaning and attention constantly. Sand filters are useful, however, in the final treatment of effluents from septic tanks and sprinkling filters.

In districts with light porous soil, seepage pits may be used to advantage. The rate of percolation should be from 0.5 to 1 gal. per square foot per day. The common practice is to dig a large pit and use it until the pores of the soil are clogged and then to fill the pit with the soil from a fresh pit. These pits are recommended only when the flow of waste is very light and should not be used for large plants. They can be used to advantage to dispose of the wastes from other types of treatment.

Broad irrigation is one of the oldest practices of sewage treatment. Under suitable conditions it is also the cheapest. The soil should be light, porous and easily drained. The most popular method of distribution is to plow the field and discharge the wastes into the furrows. Certain crops, such as maize, turnips and other cattle fodder, can be grown to advantage on the ridges. Suitable soil will absorb a maximum of 15,000 gals. per acre per day. In order to avoid sewage sickness of the land, it is advisable to use areas alternately, plowing up part of the field while other areas are in use. This method is also excellent as an auxiliary treatment and for the final disposal of effluents from other processes.

There is generally an odour rising from fields used for broad irrigation and it is advisable that the field be well removed from habitations. The addition of chlorine, chloride of lime or solution of hypochlorite to the wastes before discharging to the field has been found advisable to control the odours.

Filtration through straw mattresses is useful as a preliminary treatment. It removes the gross solids and aids in the subsequent treatment of the wastes. The mattresses should be renewed frequently to prevent nuisance and the old mattresses should be burned or buried.

Biological Methods

Biological processes include anaerobic digestion in septic tanks with the auxiliary disposal through seepage pits or tile drains and aerobic digestion, using sprinkling filters or an activated sludge plant.

Septic tanks for the treatment of trade wastes are essentially of the same design as used for domestic sewage. The effluent from a septic tank is not sufficiently stable to be discharged without further treatment and the effluent is generally disposed of, if the soil be suitable, in seepage pits, by broad irrigation or in tile drains.

Supervision of the tank is essential. Fat particles and lumps of casein rise to the top of the digesting liquor. The resultant scum must be periodically removed to prevent an excess collecting to be carried with the effluent to the filtration area, plugging the pores and rendering treatment of the filtration

area necessary. Treatment in septic tanks is particularly suitable for small plants where the liquors can be easily discharged in weeping tile, without running into excessive costs and preparation of the drainage area. It is necessary to emphasize the point that if fat particles and lumps of casein are discharged into tile or seepage pits, they will inevitably clog the soil and prevent the wastes from seeping away.

For larger plants aerobic digestion of the wastes is advocated. Of late years attention has been focused on the use of sprinkling filters for the treatment of milk wastes. The procedure is to distribute the waste uniformly over a bed about ten feet deep of some coarse material. Broken stone 1 to 2 inches is generally used as a filtering medium but coke, laths, and coarse gravel and brush mattresses have all been used successfully. In larger plants the sprays for distributors are fed by siphon and work intermittently. Under these conditions the filter bed is rested at regular intervals. It is sound practice to have the sides of the bed open to the air, so that air can penetrate continuously into the mass.

During the operation of a sprinkling filter a gelatinous scum forms on the surface of the filtering medium. This film contains enormous numbers of bacteria, protozoa and even higher forms of life, which live on the organic matters in the wastes as it trickles through the bed. Partially digested organic matter which has been sloughed from the bed is discharged with the effluent. This is readily settled in a subsequent small settling tank called a humus tank, and should be removed therefrom at regular and frequent intervals. Where a fair dilution of the effluent can be obtained, no further treatment is essential. The following results were obtained with an experimental unit. The oxygen demand was reduced from 40 to 90 per cent and the biochemical oxygen demand from 60 to 90 per cent. The reduction of the solids was from 20 to 60 per cent with an average reduction of 50 per cent and nitrites and nitrates were produced. Satisfactory results were obtained with a waste running less than 2 per cent whole milk with dosages up to 1½ million Imperial gallons per acre per day.

Contact filters are somewhat the same as sprinkling filters. The main difference is the operation. The waste is run into the filter and held in contact for a specific period of time, generally about an hour. The waste is then discharged and the filter rested before receiving another dose.

The activated sludge process consists of adding sludge from previous treatments to the untreated wastes and agitating the mixture either by mechanical means or air for a period of from 4 to 6 hours. The particles of the sludge scrub the liquid, removing most of the suspended solids and even a portion of the solids in solution. The effluent from the group of agitation or aeration tanks goes to settling tanks.

A portion of the sludge settled goes back to inoculate the incoming wastes, while the remainder is best disposed of on the land. The effluent from this process, if the plant is working satisfactorily, can be discharged into adjacent

streams without further treatment. The sludge from this process is putrescible and where the sludge is disposed on the land it should be ploughed in to prevent a nuisance.

The aeration or agitation period required is greater than that required for domestic sewage because during the oxidation of the carbonaceous matter CO_2 is released. The CO_2 reacts with the floc. This type of treatment plant is one which should be used only at the larger plants, where proper technical supervision can be maintained.

Chemical Methods

Chemical precipitation is practised in one or two plants. It consists of intimately mixing a coagulant, such as ferrous sulphate (copperas), chlorinated copperas, ferric chloride, or alum, with the waste, and bringing the pH to the optimum for coagulation, with lime. The mixture is settled for an hour and the supernatant liquor discharged. The sludge is spread on the land and ploughed in. With careful operation, the results show a reduction in the oxygen consumed of between 70 and 75 per cent.

The War Against Cancer

CANADIANS should know that, in some instances, cancer is preventable and that, in many, it is curable. With our present knowledge, the only real hope we have of reducing the ravages of cancer lies in having more cases come for treatment in the earliest stages of the disease when many can be cured by proper treatment. The medical profession stand ready to apply medical science. The war against cancer now rests with the public because the individual cases themselves must seek medical care early; the doctor cannot go out and gather them in.

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PERNICIOUS ANAEMIA AND LIVER THERAPY

THE pioneer work of Whipple and his collaborators on blood regeneration and the signal contribution of Minot and Murphy in establishing the efficacy of liver in the treatment of pernicious anaemia have entirely altered the outlook in this disease. Prior to 1926 the average duration of life from the onset of symptoms was only two or three years. Now, by adequate use of liver, a fatal termination may be indefinitely postponed in the great majority of cases. The clinical experience of the last eight years has been gratifying and would seem to warrant the statement that, under satisfactory conditions, a patient with pernicious anaemia has a life expectancy as great as that of other persons of the same sex and age in the community.

Statistics show that in Canada, from 1921 to 1926, mortality from pernicious anaemia was tending to increase. Probably this was due largely to a wider clinical interest, better diagnosis and more accurate certification of death. Following the introduction of liver therapy, a striking and statistically significant decline in mortality occurred. This reduction amounted to more than thirty per cent. Thus far this improvement has continued. That the reduction in mortality has occurred almost synchronously in the United States, England and Wales, and in Canada, may be considered as further evidence of the efficiency of the new therapy in postponing death.

Although the immediate clinical outlook in cases of pernicious anaemia is so much brighter than formerly, we stand at present in practically the same position as we do in diabetes. In both diseases it is possible to postpone a fatal outcome by the administration of an extract of a normal organ of the animal body. Control of the patient's new regime is essential to success. Dietary indiscretion in diabetes has its counterpart in pernicious anaemia when the patient fails to remain on the maintenance dose of liver recommended. This has been shown to be responsible for many relapses and probably many unnecessary deaths. Success is contingent on the intelligent co-operation of the patient at all times and patients must be willing to take the required amount of liver indefinitely. Difficulties have frequently been encountered in past years in getting patients to take sufficient liver by mouth. These difficulties are now being successfully met by the newer, more economical and better controlled procedure of intramuscular injections. It is almost certain that early diagnosis and the

co-operation of patient with the physician after the diagnosis is established, will result in further reduction in mortality, particularly at ages under 70 years, as has already been observed.

Little is accurately known of the epidemiological features of pernicious anaemia and though mortality statistics give far from a perfect picture at present, this approach toward etiology merits a thorough investigation. The wide variations in mortality from place to place in Canada suggest that careful study of mortality records, undertaken to see what may be learned of differential distribution in this disease, may yield many data of interest and value.

A. H. Sellers.

NEW PLAN FOR UNEMPLOYMENT MEDICAL RELIEF IN ONTARIO

IN October, 1932, provision was made by the Government of Ontario to assist the municipalities in providing medical services to persons on relief. In those municipalities adopting the plan, physicians were paid for their services to persons on relief to a maximum of $100 per month and provision was made later for payment up to $12 a month for drugs. The increasing cost and the limited service provided therefore made it imperative that changes be effected. The Council of the Ontario Medical Association presented to the Government a plan which it believed would be acceptable to the profession and would assist the Government and the municipalities in meeting the urgent needs. This plan has been accepted by the Government and becomes effective on April 1st.

The Ontario Medical Association will undertake the administration of this measure. Medical relief will be provided in every municipality receiving money from the Government for unemployment relief. The Government will provide the Ontario Medical Association with a monthly amount equivalent to twenty-five cents for each person on relief. The municipalities will be grouped together in suitable areas, where necessary, and the work will be supervised by a medical relief committee. The committee will include the relief officer, not less than three doctors, who are to be selected by the affiliated medical society in the area, and a druggist named by the Ontario Retail Druggists' Association. The nominations of the physicians are to be approved by the Ontario Medical Association. To the committee each doctor will submit his accounts and a summary of the work done during the month. Provision is made for the payment of local administration expenses and for the general administration by the Ontario Medical Association, which will receive 4 per cent of the funds. From the net funds the medical relief committee will pay the doctors' accounts pro rata. With the exception of certain household remedies which are provided from general relief funds, the physician is required to supply all drugs used.

The placing of the responsibility directly with the provincial medical association is unique and without precedent in Canada. It is only reasonable to expect that some changes may be found necessary, but the principle that the profession should take the leadership in providing medical services has the hearty endorsation of all who are concerned with the problem.

NATIONAL CONFERENCE

Public Health In the Problems of Today

Canadian Public Health Association
Ontario Health Officers' Association
Canadian Tuberculosis Association
Canadian Social Hygiene Council

Royal York Hotel, TORONTO, June 3-5, 1935

SKYLINE OF TORONTO, 1935.

FOR twenty-four years the Canadian Public Health Association has had the privilege of calling together from all parts of Canada the municipal and provincial medical officers of health, with members of the nursing and engineering professions and others engaged in public health work. In convening the twenty-fourth annual meeting the Association has appreciated the tremendous responsibility which rests on the Dominion Government and on the Legislatures of the Provinces to meet the urgent problems presented by the present conditions. Of first importance are the measures to maintain and improve the physical and mental well-being of our people; plans for the provision of an adequate medical service demand consideration. The entire program is being planned to permit of the presentation of these problems and full discussion. With the added strength of the largest group in our national association, the Ontario Health Officers' Association, and with the expert leadership afforded by the Canadian Tuberculosis Association in the problem of tuberculosis and the Canadian Social Hygiene Council in the dissemination of preventive medicine to the public, the twenty-fourth annual meeting becomes truly a national conference on health.

The opening session of the conference will be held on Monday, June 3rd, with Section meetings commencing at 9.30 a.m. The Ontario Health Officers' Association and the Canadian Tuberculosis Association will convene for their programs at 10.30 a.m. The associations will unite in general sessions on the three afternoons of the conference. An extensive scientific exhibit is being prepared by a joint committee and for the first time in the history of the associations the exhibits will be open to the public in the afternoons and evenings. On Monday evening the exhibits will be sponsored by the Canadian Tuberculosis Association and a short program of special interest to the public will be provided. Similar arrangements are being made for Tuesday and Wednesday evenings. On Tuesday evening the annual round-table dinner meeting arranged by the Ontario Health Officers' Association will be held. On Wednesday evening the Canadian Social Hygiene Council will hold its annual meeting. Luncheons arranged by various Sections of the Canadian Public Health Association, the Canadian Tuberculosis Association and the Canadian Social Hygiene Council are being planned.

The following schedule of meetings indicates the tentative arrangements for the conference.

Monday, June 3rd

9.30 a.m.—Section meetings, Canadian Public Health Association:
Vital Statistics.
Mental Hygiene and Social Hygiene.

10.30 a.m.—Ontario Health Officers' Association.
Canadian Tuberculosis Association.

2.30 p.m.—General session.

6.30 p.m.—Supper meeting, Vital Statistics Section, Canadian Public Health Association.

8.15 p.m.—Executive Council meeting, Canadian Public Health Association.

7.30-10.00 p.m.—Scientific exhibits and program sponsored by the Canadian Tuberculosis Association, open to the public.

Tuesday, June 4th

9.30 a.m.—Section meetings, Canadian Public Health Association:
Laboratory.
Vital Statistics.
Public Health Engineering.
Public Health Nursing.

Ontario Health Officers' Association:
Section A: Rural Problems.
Section B: Urban Problems.

Clinical session, Canadian Tuberculosis Association.

1.00 p.m.—Luncheon sessions, Sections of Public Health Nursing and Public Health Engineering, Canadian Public Health Association.

2.30 p.m.—General session. Subject: Tuberculosis.

7.00 p.m.—Round-table dinner conference, Ontario Health Officers' Association.

7.30-10.00 p.m.—Scientific exhibits and a special program open to the public.

Wednesday, June 5th

9.30 a.m.—Section meetings, Canadian Public Health Association:
Laboratory.
Vital Statistics.
Industrial Hygiene.

Ontario Health Officers' Association:
Series of demonstrations.

Clinical session, Canadian Tuberculosis Association.

1.00 p.m.—Luncheon session, Canadian Public Health Association.
Luncheon session, Canadian Tuberculosis Association.

2.30 p.m.—General session.

8.00 p.m.—Annual meeting, Canadian Social Hygiene Council.

7.30-10.00 p.m.—Scientific exhibits and a special program open to the public.

DR. WARD WOOLER, Ayr, Ontario,
President, Ontario Health Officers' Association

Ontario Health Officers' Association 21st Annual Meeting

Every member of the Ontario Health Officers' Association is a member of the Canadian Public Health Association. Our national association represents the joining together of the provincially organized health associations. The joint meeting, however, does not mean that the interests of the provincial association are in any measure subjugated. The Ontario Health Officers' Association will hold sessions each morning during the three days of the convention. Under the direction of Dr. Ward Woolner, a Committee on Program has given careful consideration to the particular needs of the members of the Association. The features of former meetings which have proved of particular value have been included in this year's program, namely the holding of a series of demonstrations by the various divisions of the Provincial Department of Health, the annual round-table dinner, and the opportunity on Tuesday morning for health officers of rural and urban municipalities to meet separately for the discussion of pertinent problems. Last year the attendance was outstanding. With the advantages of a national meeting bringing a number of internationally known visiting speakers and with scientific exhibits provided by the four associations, a record attendance should be reached. The address of the president will be given on Tuesday afternoon and will form the basis of discussion at the round-table conference that evening.

Exhibits

The place of scientific and commercial exhibits as part of an annual meeting is being increasingly recognized by medical associations. It is felt that scientific exhibits may properly occupy as important a part of the program as do clinical and formal sessions. Although in the past the Canadian Public Health Association has not undertaken extensive scientific exhibits, the co-operation of the Canadian Tuberculosis Association, the Ontario Health Officers' Association and the Canadian Social Hygiene Council has made possible the provision of an exhibit which will be of great interest not only to public health workers but also to the general public. It is planned to use the exhibits as a means of presenting the subjects of the conference in a way that the public may appreciate their significance and importance. To this end, the exhibits will be open to the public during the afternoons and evenings and a suitable program will be provided by the associations in the evenings.

Entertainment

Plans are being made by the Ladies' Committee for the entertainment of visiting ladies. It will be appreciated by the General Secretary if the names of visiting ladies may be received in order that arrangements may be completed.

INDUSTRIAL HYGIENE

RAILWAY SANITATION*

ALEX. R. WHITE

Chief Sanitary Inspector, Canadian National Railways, Montreal

THERE is very little if any difference in the principles of good hygiene or sanitation as applied by a railway company and that in any well-ordered municipality. There may be, however, a difference in the degree of application. Railway companies must comply with the various Public Health Acts of the country, as well as city ordinances designed for the preservation of public health. In addition to the fulfilment of such legal requirements, there still remains much to be done in connection with cleansing, deodorization, fumigation, etc., of its steamships, and railway passenger and freight equipment, in relationship to the hotel system and the terminal towns over which it must keep active supervision.

Control of Water Supplies

Water supplies used by the railway company are, as a rule, made available by the municipalities through which the railway passes. Water is a problem, therefore, only where small terminal towns and villages have grown up around railroad shops and are dependent on the railway for their water supply. The railway company is obliged to provide a safe water supply, and at times a sewage system, but as the same principles of water purification, including chlorination, and of sewage disposal apply as in any municipality, there is really no difficulty except that of cost. Domestic drinking water containers on trains, and occasionally at stations where no pressure supply is available, have to be washed out and sterilized at regular intervals; and in order that adequate control over such supplies may be maintained, water samples are checked bacteriologically and such action taken as the situation would seem to demand. If owned by the company, water supplies, wherever situated, are subjected to laboratory tests at regular intervals. Our company is perhaps fortunate in that some few years ago it was deemed expedient to install a small bacteriological laboratory where routine examination of water and milk might be made and where research could be carried on, either bacteriological or chemical, in connection with any problem which might present itself. This laboratory has been of great value as large savings have been effected through its activities.

Economic Value of Good Hygiene

Some activities which are perhaps a little unusual are of much importance to an industrial organization such as ours. It is an accepted fact among railways that the practice of good hygiene actually attracts passenger business and is a rather subtle method of advertising. It is considered good business to keep equipment in first-class sanitary condition and to serve in our dining cars the best food that money can buy. Thus, with new products coming constantly on the market, research is necessary to determine, for instance, the best kind of washing agent and to supervise adequately many of the perishable food supplies carried on our trains. For such activities the laboratory has been invaluable.

Milk and Cream

The purchase of milk and cream for the railway differs from the ordinary routine business as carried on by the average dairyman in our large towns and cities. As a rule, departments

Presented before the Section of Industrial Hygiene at the Twenty-Third Annual Meeting of the Canadian Public Health Association, Montreal, June, 1934.

of agriculture, boards of health and other supervisory authorities are interested in the bacteriological content of milk being purchased and sold, but are not so vitally interested in its keeping quality. Milk is produced and left on the doorstep one morning and is, as a rule, consumed before the following morning, when a fresh bottle is available. A carrying company is not in the same position, unfortunately. As an illustration, one might purchase a large quantity of bottled milk and cream for dining car use, anticipating a volume of business which may not materialize. As a consequence, four or five days after the purchase of milk and cream, much of it may remain unsold. If the keeping quality is not of the highest order, not only would the railway suffer large losses in sour milk, but many complaints would be received from passengers using the service, which, of course, would be bad advertising. The steamships of the company to which I am responsible are carrying fresh milk and cream regularly from Canada to the British West Indies and return, the round trip taking thirty-three days, and are succeeding in keeping this milk and cream sweet for this period. I mention this as it illustrates what can be done with milk which has been well produced, well pasteurized, and well kept.

Eradication of Odours

It is of first importance to a railway that freight equipment, including refrigerator cars and holds of vessels, be kept in a thoroughly sanitary condition. This is not as easy as would at first appear. Objectionable odours which remain in the equipment after it has been used for carrying fish, fruit or other odoriferous merchandise must be removed as rapidly as possible in order that the equipment may be available for whatever other consignments of goods may be offered for transportation. A good deal of research has been necessary in order to gain information and develop materials and methods which enable rapid deodorization at a minimum of cost.

Pestiferous Insects in Grain and Flour

A department charged with the maintenance of good hygiene has still another problem. Owing to the depression, I presume, with the much longer storage of field crops in elevators and in flour mills, there has been in the last two or three years an extremely large increase in pestiferous insects which attack grain in the elevators and are conveyed to the flour mills and from the flour mills to our equipment. Thus there has developed a serious problem for the railway and a search was made for practical ways and means for the eradication of such pests. This necessitated first a careful study of the various groups of weevils, meal worms, flour moths, etc., in order to deal properly with such a situation. After much investigation the railway has developed a technique to cope with all such situations as these and has instituted the use of lethal gases for the eradication of such pests. The company now maintains at its principal terminals men who are trained in the use of gases containing cyanide or cyanide compounds and who are able to deal with the question of fumigation in all of its varied phases.

PUBLIC HEALTH NURSING

A VISITING NURSE PROGRAMME AS A TEACHING UNIT*

BEATRIX BROOKES, B.A., REG.N.
Victorian Order of Nurses, Montreal

THEORETICALLY 30 per cent of a district nurse's work is instructive, but in practice a staff nurse spends 100 per cent of her time in teaching the principles of hygiene. Entering a home at the request of a family who are in need of aid, a nurse has an excellent opportunity to win the confidence of the household. It is the policy of our organization to approach a case of illness from the family angle and, in so far as it is possible, to devise a plan of improving the health of every member of the family as well as that of the patient. To do this the nurse must be a teacher of hygiene and should be just as conversant with pedagogical principles as a teacher in any other field. A staff nurse should be chosen with this primary requirement in mind. Accordingly, for our staff we select nurses who have graduated from a good training school and who also have had additional training through a public health course in a university school.

After properly trained persons are selected for the nursing staff, a programme of staff education is carried on. New nurses are introduced to field work in an educational centre under the guidance of the educational supervisor. The nurses form a conference committee to plan the schedule of educational meetings. These meetings are designed to help the staff by providing opportunities for discussing problems of which they feel there is the greatest need for consideration. Papers are read and discussions are led by staff nurses. Occasionally experts are invited to give more specific information in a given field. There is also a definite programme of supervision of the new nurse's work by visits of the supervisor with the nurse to patients and by office consultations. Members of the staff are encouraged to make use of community resources and to take lecture courses of a cultural nature.

The nursing programme may be divided for convenience into two sections, maternal care and general nursing.

Maternal Care

In our maternity programme we try to reach the mothers as early in pregnancy as possible. Once the contact is made and a physician secured, the patient is seen once a month during the first six months, every second week during the seventh and eighth months, and weekly during the ninth month. During this time an intensive and instructive programme is carried, with emphasis on the nutrition of both the mother and the family. To this end, a special nutrition record is provided for each antenatal case. These records were designed and are observed by the staff nutritionist, who is available for advice and visits if the dietary problem is such that special instruction is required. While the nurse does not take the blood pressure or make a urinalysis, great stress is laid on regular visits to a doctor's office or to a clinic. Group classes are held for mothers whenever possible and a regular series of antenatal lectures is given.

A twenty-four hour confinement service gives continuity in the care of the patient. Following a confinement, a normal case is attended for eight days or until the patient is up

**Presented before the Section of Public Health Nursing at the Twenty-third Annual Meeting of the Canadian Public Health Association, Montreal, June, 1934.*

and about. During this time, through the co-operation of the Junior League, we send to homes in which there is no help housekeepers to take charge during the mother's illness. These housekeepers are given lectures by the nutritionist to make them conversant with the needs of the families whom they visit. During the month after confinement the mother and the babe are visited weekly. At these visits the emphasis is largely on maintaining breast feeding and establishing a good routine for the baby. At the end of this time, if the private physician is willing, the baby is transferred to the child welfare section for further supervision.

General Nursing

In the general nursing service the nurse, during her association with the patient, endeavours to carry out a similar programme. Nursing care is provided for the patient. If the disease is communicable, the family is instructed in isolation technique, the value of immunization, and the danger of complications. If the patient is confined in bed by a chronic condition, interest in life is often revived by the contact with the nurse and the stimulation which our occupational therapy worker provides.

As an essential part of a visit, the nurse endeavours to find out the dietary habits of the family. If there is a nutritional problem, instruction is given for the improvement of dietary habits. She will also ascertain the presence of other health needs in the family, such as children not immunized against diphtheria or vaccinated against smallpox, or the occurrence of dental caries, infected tonsils, tuberculous conditions, behaviour problems. In such cases she endeavours to initiate the correction of these defects.

Finally, the visiting nurse must make contacts with the social welfare agencies in her district, such as hospital clinics, settlement houses, schools, etc., so that she may use all their facilities in her plans for the families under her care.

PUBLIC HEALTH ADMINISTRATION

RESTAURANT HYGIENE

A. S. O'HARA, M.R.SAN.I.

Provincial Sanitary Inspector, Ontario

THE trend towards bulk manufacture and state inspection of foods at the point of production, with subsequent control almost to the consumer's door, has resulted in a greater uniformity of quality and cleanliness than that for which the most optimistic sanitarian would have dared to hope twenty-five years ago. This is particularly true of canned and packaged goods. In public eating places, however, the introduction of an additional group of handlers between producer and consumer creates a problem for the sanitary officer. Although the hygienic principles applicable to the health supervision of this group are definite, there is a lack of uniformity in their application which is not at all consistent with the approach to related public health activities.

A sanitary officer engaged in restaurant inspection is faced with three fundamental considerations: the health and working conditions of the food handlers, the fitness from a health standpoint of the foods for consumption, and the general environmental conditions of the entire establishment. With these basic considerations in mind, an inspection can be conducted in logical sequence.

Food handlers in a restaurant include all persons engaged in the preparation and serving of food on the premises. A food handler must be free from and avoid any contact with communicable disease, clean in his person and clothed in suitable, easily laundered garments and headgear. The alert officer will be quick to note any deviation from such requirements and to take such action as may be authorized to secure their full observance. He will confer in a friendly manner with the owner or manager, indicating the dangers from carrier infection and the desirability of periodical medical inspection of the staff. Staff accommodation must always include adequate lavatory and toilet accommodation. It will be well also to note the duration of staff rest periods and meal times and the place and manner of serving such meals.

Foods will be subject to the standard methods of food inspection. It will be in order to note the disposition of scraps and left-overs from the dining room. Considerable attention will be paid to the means of storage of foods in the raw and cooked form, and to sources of supply and methods of preservation. If ice is used, its source will be noted and the type of ice-box used. It is important to note whether food is in direct contact with the ice or separated from it. The general sanitary considerations of cleanliness, ventilation and lighting of food stores are of major importance, as is their protection from flies and vermin. Mechanical refrigerators may be examined to detect possible or actual leakage of the refrigerant.

Environmental Conditions.—A general sanitary survey of the building, with particular attention to the state of repair and type of construction, should be made. The location, type and condition of adjacent buildings should be noted. The system of conservancy and water supply will be examined, also the plumbing and drainage at discretion.

Kitchens require careful inspection, apart from general sanitary considerations. Particular attention should be given to ventilation and to the condition of service tables, elevators, meat blocks, shelves and cupboards. The method of installation and the type of cooking equipment should be observed. Some sanitarians hold the view that considerable floor space is desirable; how far this can be provided without interference with working efficiency is a matter for consideration.

Of particular importance is the provision for the proper washing of dishes and cutlery in order that the maximum degree of safety may be assured. In small establishments where mechanical apparatus for the washing and sterilizing of dishes and eating utensils cannot be provided, it is desirable that adequate provision be made for this purpose; namely, sufficient sink accommodation for washing and rinsing and an adequate supply of soap and boiling water. The avoidance of the use of dish cloths and, if possible, of drying cloths also, is essential in good practice. By the use of two sinks, one is available for the sterilization of dishes, immersing them by means of a wire tray in clear boiling water. Such dishes, when drained, do not require drying by towel. In cleansing, the system which ignores the free use of soap and hot water may be deemed unsuitable. Where mechanical cleansing apparatus is not used, the same considerations in regard to health and clothing should apply to dish washers as to food handlers.

Should a soda fountain be maintained in connection with the restaurant, careful supervision will be given to the sterilization of glassware and utensils used. The use of paper containers will be urged. If glass containers are used, adequate provision must be made for cleansing and sterilizing, and in this connection the use of hypochlorite and other suitable solutions is commendable. Inspection of ice cream and associated products should follow the standard methods applied to such foods. It must be

borne in mind that the soda fountain attendant is a food handler.

The examination of the dining room should be conducted with a view to noting general sanitary features, in particular the condition of tables, tablecloths and chairs. It should be ascertained if the furniture is cleaned regularly. Note should be taken of the condition of cutlery and utensils and the system of handling by waiters. Schedule B of the Public Health Act, Ontario, a model sanitary by-law, provides for the inclusion of wash rooms and toilets, one for males and one for females, for the accommodation of the public. The incorporation of this clause in any local by-law respecting restaurants is of great importance and it should never be omitted.

In conclusion, it cannot be too strongly emphasized that tact and discretion are essential qualities for the sanitary officer engaged in food control. The survey should always be conducted in a quiet, unobtrusive manner. If patrons note the officer's presence, a small number will appreciate the public safeguard, but many will conclude that "there is something wrong" and will patronize another restaurant. Such occurrences are not conducive to a friendly co-operation from the operator. Education is an important function of a health department and the successful officer must have an understanding of the operator's problem. Given mutual understanding, the hostility of ignorance is eliminated and the way paved for appreciation of the hygienic principles involved.

NEWS FROM THE FIELD

The King George V Jubilee Cancer Fund

CANADA'S commemoration of the 25th anniversary next May of the accession to the throne will be marked by the establishment of a national fund for the control of cancer. His Majesty has consented to have the fund officially named "The King George V Silver Jubilee Cancer Fund for Canada". The fund will be administered by a board of seven trustees and its resources will be devoted to a continuous effort to reduce in Canada the high mortality from cancer. The campaign will close on May 6th, the silver jubilee of His Majesty's accession.

Sixteenth Annual Meeting, Canadian National Committee for Mental Hygiene

MARKING the 16th anniversary of the formation of the Committee and of its national work in mental hygiene, the annual meeting of the Canadian National Committee for Mental Hygiene was held in the Ritz Carlton Hotel, Montreal, on December 7th, with the president, Dr. C. F. Martin, presiding. Dr. Martin referred briefly to the achievements of the Committee, pointing out that as a result of its efforts $20,000,000 has been spent in Canada to enable this important division of public health to carry on effectively. Stressing the importance of the preventive aspects of mental disease, Dr. Martin stated that $10,500,000 was being spent annually on the custodial care of the 30,000 persons now in mental hospitals, a large proportion of whom might not have reached mental breakdown if early preventive measures had been adopted. One of the most interesting features of the meeting was the presence of Mr. Clifford W. Beers, through whose efforts the first national organization for mental hygiene was formed in the United States 25 years ago following the publication of his book, "A Mind That Found Itself", written after a mental breakdown that lasted three years. An address was also delivered by Dr. C. M. Hincks, who, with the late Dr. C. K. Clarke, founded the Canadian National Committee. Dr. Hincks is now director of the National Committee for America but has continued as the director of the Canadian Committee, having the assistance of Dr. A. Grant Fleming, Montreal, as medical director in Canada.

Annual Health Congress Royal Sanitary Institute

THE annual Health Congress of the Royal Sanitary Institute will be held at Bournemouth this year from July 15th to 20th, under the presidency of the Right Hon. the Earl of Malmesbury. Practically every branch of public health and sanitation will receive attention, including preventive medicine, architecture, town planning and engineering, veterinary hygiene, national health insurance, and industrial hygiene. In addition there will be a health exhibition demonstrating products and appliances which aim at improving the public health and special conferences of medical officers of health, representatives of sanitary authorities, engineers and surveyors, and sanitary inspectors.

The American Neisserian Medical Society

THE American Neisserian Medical Society, which was founded in June, 1934, is dedicated to the promotion of knowledge in all that relates to the gonococcus and gonococcal infections in order that improvements may be attained in the management of gonorrhea and a reduction effected in its prevalence. The Society plans to conduct clinical and laboratory research in the diagnosis, medical and social pathology and the treatment of gonorrhea and to disseminate among the medical profession and the public authoritative information concerning the disease. At present there are 115 charter members. Invitation to membership is extended to all qualified physicians who desire to work for improvement in the management of gonorrhea. Application blanks may be obtained from the secretary, Dr. Oscar F. Cox, Jr., 475 Commonwealth Avenue, Boston, Mass.

"That Man May Live"

TO assist in meeting the very active propaganda of the anti-vivisectionists in the United States, the American College of Physicians and Surgeons has prepared a film entitled "That Man May Live". The picture was directed by Dr. MacEachern and produced by Pathé. The subject matter of two pamphlets recently issued by the College, "Animal Experimentation" and "Health Benefits from Animal Experimentation", forms the basis of the scenario.

Ontario

UNDER the provisions of the legislation relating to health units which was passed at the last session of the Legislature, the first full-time health unit in Ontario has been established by the Provincial Department of Health in the four eastern counties of Stormont, Glengarry, Prescott and Russell. The work is being financed jointly by the Provincial Government and the counties, and the Rockefeller Foundation has made a grant of $33,000 to be used during the next five years. The total population of these counties is approximately 90,000. Dr. Murray G. Thomson, D.P.H., formerly medical officer of health for district no. 3, Ontario, has been appointed medical director. Eight nurses have been attached to the unit and the public health nursing and visiting nursing programme will be directed by Miss Muriel Lowry. The office of the unit is located at Alexandria.

Following more than 20 years' association with the Dominion Bureau of Statistics, Mr. A. J. Pelletier has been appointed chief of the Division of Demography, succeeding Mr. E. S. Macphail, who retired last December.

In reply to the following questionnaire, "Do you approve of the principles of health insurance whereby in the province of Ontario those below a certain income will be provided with adequate medical service?", members of the Ontario Medical Association in a recent poll indicated their approval of health insurance. Approval was expressed by 887 physicians, 30 were opposed and 17 were undecided. As to the question, "Should the Ontario Medical Association outline a plan of health insurance?", 889 voted affirmatively, 35 were opposed and 31 were undecided.

Nova Scotia

DR. A. F. MILLER, medical superintendent of the Nova Scotia Sanatorium, Kentville, was honoured by the staff members and the patients of that institution at a dinner to mark the 25th anniversary of his appointment and to express appreciation of his leadership in the anti-tuberculosis programme in Nova Scotia.

BOOKS AND REPORTS

Some Notable Epidemics. By H. Harold Scott, M.D., F.R.C.P. (Lond.), D.P.H., D.T.M. and H. (Camb.), F.R.S.E. With a preface by W. W. Jameson, M.A., M.D., F.R.C.P. Published by the Macmillans in Canada. St. Martin's House, 70 Bond Street, Toronto, 1935. 272 pages. Price, $3.75.

The author of this delightful book gives, as one reason for writing it, the fascination that detective stories have for most readers. He truthfully says that a reasoned consideration of the epidemics of the latter half of the last century forms an interesting study of the epidemiological detective methods of the day. However, though the classical outbreaks are subjects on which all students of public health should be informed, the original accounts are not only rare, but contain so much irrelevant matter that "the hard-worked, brain-fagged student is ready to agree with Mr. Weller's dictum regarding the learning of the alphabet, that it hardly seems worth while to go through so much to gain so little."

Accordingly, Dr. Scott has performed a service of great value. In his consideration of a score of epidemics, he has taken the original accounts, and after removing "the extraneous accretions of time" he exhibits the facts as they appeared to "those who were at the time of their occurrence engaged in their investigation" in a form which he modestly hopes "may interest and instruct."

He begins with the Broad Street Pump Cholera outbreak of 1854, "the most terrible outbreak which ever occurred in this kingdom." Not one page of the chapter devoted to this could be omitted, for it leaves one familiar not only with the facts of the epidemic, but with the notions of cholera in those "pre-bacteria" days, and fills one with wonder at the "acumen, ... the untiring energy, logical reasoning and wise advice" of Dr. John Snow.

Following this are a number of water and milk-borne epidemics of enteric fever which not only demonstrate the advances in epidemiological inquiry but also illustrate the development of sanitary science in modern England. These are succeeded by milk-borne outbreaks of diphtheria, scarlet fever and sore throat. Outbreaks of food poisoning and enteric conveyed by infected food then follow. The last two chapters are given over to a series of outbreaks in Aberdeen and to a number of epidemics of Sonne dysentery.

In each epidemic, the *mise en scène* is deftly laid out in a manner suggesting that the author indeed knows his Conan Doyle. The facts, quoted from the old reports, are admirably and logically arranged and connecting them are the author's commentaries, composed of well-worded phrases with apt allusions that make the whole good reading and easy to remember.

The only drawback to this book is the complete absence of maps. These would have greatly enhanced the value of a book that should be read by every student of epidemiology and public health.

G.R.W.

What You Should Know About Cancer. No. 1 in the "What You Should Know about ———" series, prepared under the general editorship of Grant Fleming, M.C., M.D., D.P.H., F.R.C.P.(C.). Published by the Macmillan Company of Canada Limited, at St. Martin's House, 70 Bond Street, Toronto, 1935. 41 pages. Price, 25 cents.

This little booklet is the first fruits of a laudable effort of the Canadian Medical Association to provide the Canadian public with reliable information concerning health. In it cancer is discussed in everyday language so that ordinary people can read and understand. In a short introductory chapter the difference between healthy tissue and cancer is clearly defined. A most useful statistical survey of cancer deaths in our own country follows. Due consideration is given to the cause, signs and treatment of cancer. The danger of fake remedies is emphasized.

The booklet is admirable, giving as it does those facts on this most vital question that each well-informed person should know. It will be of great value also to physicians, as it brings together concisely so much timely information, and permits them to place in the hands of those particularly interested the facts in simple, brief and very readable form.

G.R.W.

BOOKS RECEIVED

The Care of the Aged, the Dying and the Dead. By Alfred Worcester A.M., M.D., Sc.D. Published by Charles C. Thomas, Springfield, Illinois, 1935. 77 pages. Price, $1.00.

Sex-Hygiene. What to teach and how to teach it. By Alfred Worcester, A.M., M.D., Sc.D. Published by Charles C. Thomas, Springfield, Illinois, 1934. VIII +136 pages. Price, $2.50.

CURRENT HEALTH LITERATURE

These abstracts are intended to direct attention to articles that have appeared in other journals during the past month. Any of the journals referred to may be borrowed for three days or longer if desired. Address requests to the secretary of the Editorial Board.

The Serological Diagnosis of Smallpox and the Laboratory Investigation of Vaccinia

The occasion of the Harben Lectures has given Professor Tulloch the opportunity of presenting in a most comprehensive manner the present knowledge of vaccinia virus and the practical applications in diagnosis and prevention of smallpox. The author is known as one of the outstanding authorities in this field.

In reference to the service of the laboratory in aiding the physician in the diagnosis of smallpox in mild or late cases, the value of the four tests which may be employed is reviewed. The value of Paul's test, in which the cornea of a rabbit's eye is inoculated with variolous material, is limited, being frequently negative in known cases, which failure is explained by the reaction being dependent on living virus. A second method in which variolous material is injected intradermally into a normal rabbit, is also of definite but limited value. As in Paul's test, the results cannot be obtained for several days and in this test control observations should be made in a rabbit previously vaccinated. If so conducted, the test gives valuable information. In addition to these, two serological tests have been well established. These are the flocculation and the complement-fixation reactions. In both, vesicle fluid or extract of crusts is used with a known anti-vaccinia serum obtained from vaccinated rabbits. In obtaining crusts from clinical cases care must be taken to select material from actual lesions. Vesicle fluid can be forwarded to the laboratory for these tests on swabs or in capillary tubes.

The author discusses two important laboratory problems, (a) the development of methods whereby general infantile vaccination could be dispensed with without danger to the community and (b) the production of a vaccine which would stimulate immunity without severe local disturbance or serious sequelae. In reference to the possible use of anti-vaccinia serum to confer passive immunity in individuals exposed to virulent smallpox, experimental data are presented showing that as a prophylactic agent early in the incubation period—i.e., prior to cellular parasitism by the virus—it may be of value. The many new fields of study, including the use of dried vaccine virus, killed virus, virus-serum mixtures and tissue culture virus as immunizing agents, are discussed.

W. J. Tulloch, J. State Med., *42*: 683, 1934.

Doctors, Dollars and Disease

Through the National Advisory Council on Radio in Education, which was organized in 1930, a series of radio addresses on the provision of adequate medical services for every community has been presented during the past five months over the Columbia Broadcasting System.

The addresses were sponsored by a committee under the chairmanship of Dr. W. T. Foster and including Dr. H. S. Cumming. Dr. Haven Emerson, Dr. Alice Hamilton, Dr. Thomas Parran, Jr., and Dr. Ray Lyman Wilbur. The title of the addresses as popularly presented is "Doctors, Dollars and Disease" and they are being published by the University of Chicago Press.

The following are the titles and authors of the lectures delivered from October 1, 1934, to February 11, 1935: "What It is All About" and "Achievements of the Medical Profession", Dr. William Trufant Foster; "Uncared-for Needs", Dr. C. E. A. Winslow; "Group Payment for Hospital Care", Robert Jolly; "Medical Care for All", Sir Arthur Newsholme, K.C.B.; "Public Health Needs", Dr. Thomas Parran, Jr.; "Preventive Medicine", Dr. George H. Bigelow; "Mass Prosperity and Medical Care", Edward A. Filene; "Uneven Costs of Sickness and How to Meet Them", Paul H. Douglas; "Tiny Tims of Today", Dr. William Trufant Foster; "Progress in 1934", Dr. Michael M. Davis and Dr. C. Rufus Rorem; "Budgeting Hospital Bills", Frank Van Dyk and Homer Wickenden; "The Nurse's Part in Public Health", Miss Katharine Tucker; "Mutual Health Service", Nathan Sinai; "The Government's Part in Medical Care", William Hard; "Where Doctors are Lacking and Why!", Dr. Haven Emerson; and "Present Trends in Health Insurance", Dr. I. S. Falk.